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# MOTOR BOATING



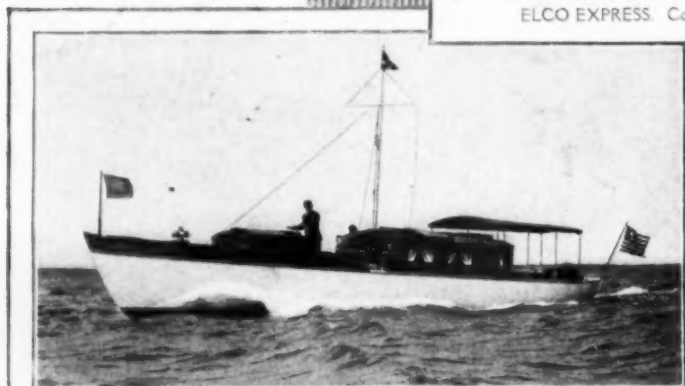


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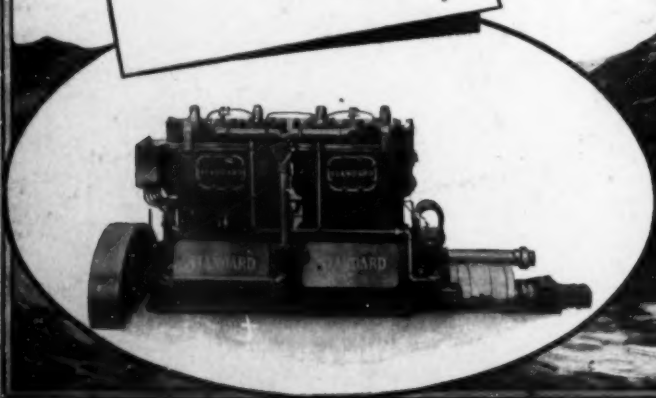
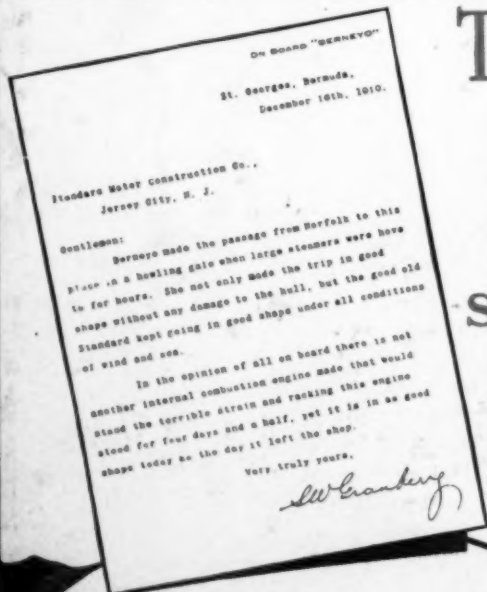
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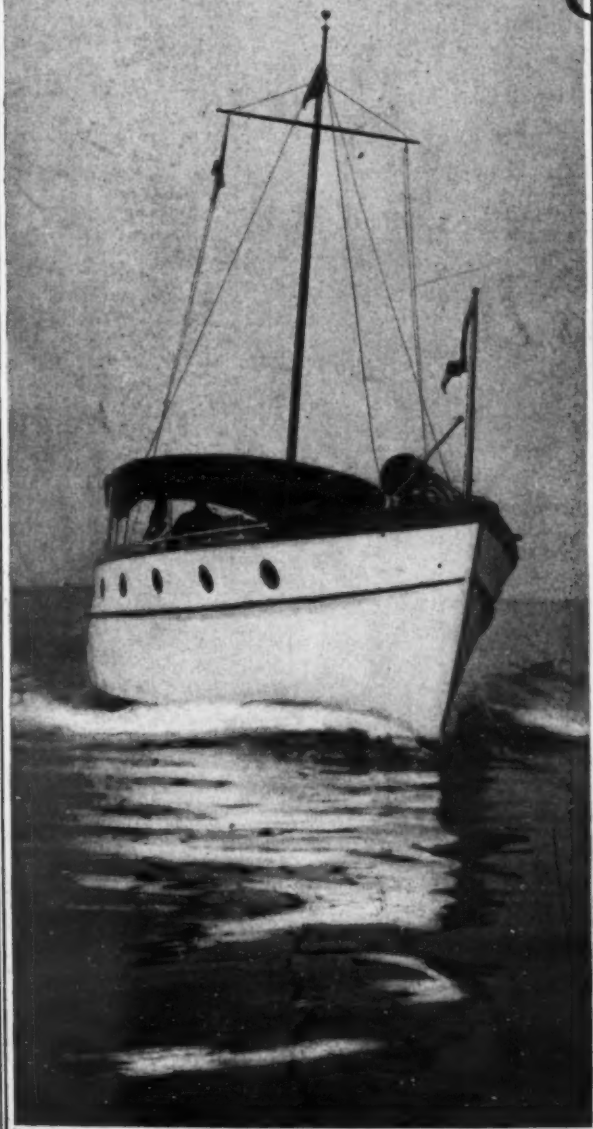
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May, 1911.

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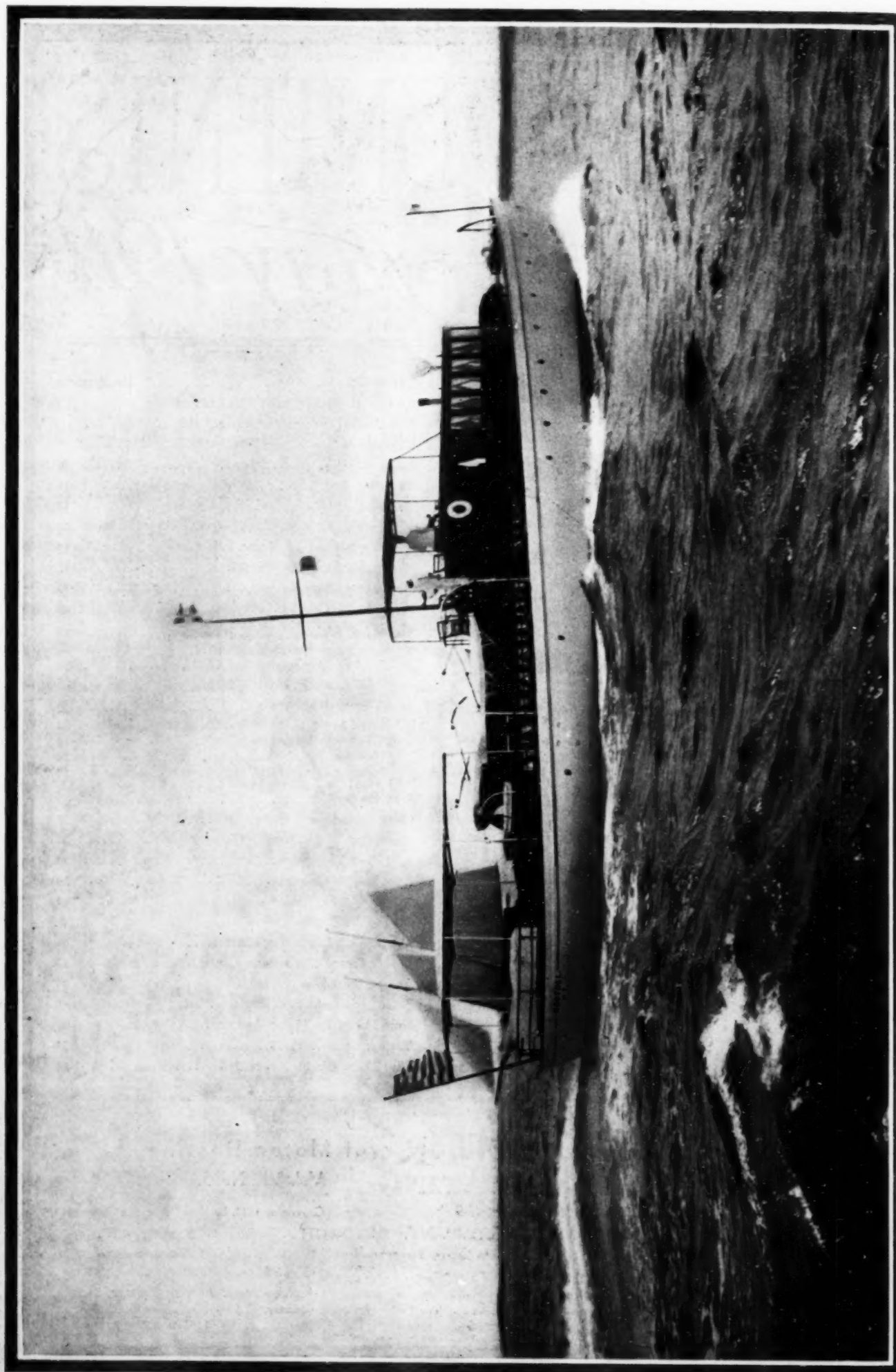
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*Photograph by Edwin Levick.*

**The Rivals—**The motor yacht is Kestrel, a 91-footer of 14 ft. 10 in. beam and 5 ft. draft, owned by Mr. E. F. Caldwell of New York. She was designed by Morgan Barney and is equipped with two Standard motors aggregating 120 horse power.



# MOTOR BOATING

THE NATIONAL MAGAZINE OF MOTOR BOATING

## The Boats That Raced at Monaco.

A Description of the Boats at the Eighth and Greatest Annual Monaco Motor Boat Meet. Maple Leaf III, Ursula, the Gregoire Entrants and a Number of Other Interesting Craft.

By Robert Fletcher.

Special Representative of MoToR Boating.

**D**ESPITE croakers who predict that every Monaco motor boat meeting will be the last, the eighth annual gathering at the little principality on the French-Italian frontier line has united a greater number of boats than ever before. And, from an examination of the hundred and thirty craft gathered in the open-air exhibition ground on the edge of the Mediterranean, it can be stated that quality, too, is higher than in previous years.

The difficulty in connection with the Monaco gathering has always been to get entries for the big, unlimited power racer class, for as this class of boat costs anything from \$40,000 to \$50,000 to produce, it is not the average motor boatman who can bring forth a competitor. This year there are five unlimited boats: Ursula, owned by the Duke of Westminster, the big racer engine by the Wolseley Company which has already put in two seasons at Monaco; Cocorico II, also a last year's boat, and entered both as a cruiser and as a racer; Maple Leaf III, which it is believed will prove to be the fastest craft afloat, and the French defender Clement-Despujols. All these will run for the Coupe des Nations, the most important prize on the Monaco program, and one offering \$3,000 to be distributed among the three leading boats.

Maple Leaf III is without doubt not only the most interesting boat in its class, but the most powerful and the most original craft in the whole meeting. She has very little in common with last year's boat of the same name, which was brought here in an unfinished condition and went away without ever putting out to sea. Her owner, Mr. Mackay Edgar, entrusted the designing of the hull to Sir John Thornycroft. Dixon Bros. and Hutchinson built the boat, and the motors

were constructed by the Astell Company. The hull is a most original conception; it has a deep V-section bow almost as fine as that of its rival Ursula, a shallow step, with a very open V-section just ahead of the step, then practically a flat bottom rearwards, with very little depth of hull fully astern. She has a pronounced whaleback deck, with a big open cockpit protected by a canvas cover mounted on aluminum hoops. Her two motors, each having twelve cylinders en V, with a bore and stroke of 7 by 7½ inches, are carried side by side, each driving its own propeller, and each connected up to its shaft through a clutch without the use of a reversing gear. The motors have their valves superposed, the intakes being in the head and operated by overhead mechanism, with the exhausts immediately below. The water-jacketed exhaust is carried straight down the centre of each motor, in the angle formed by the two sets of cylinders, the two being united just aft of the motors and carried straight astern to exhaust just above the water line. One of these motors was used on last year's Maple Leaf II; the duplicate was built this year. The power plant has given 800 horsepower, and in tests carried out off Southampton has pushed the boat along at the rate of over 56 miles an hour. If the engines

give no trouble it is evident that Maple Leaf will carry all before her.

One of the peculiarities of Maple Leaf is the use of two rudders united by double connecting bars carried outboard and controlled together in the usual way. Each propeller is mounted in the same plane as the rudder, the extremity of the propeller shaft being carried in a bearing on the base of the rudder post. It has become common among the French designers to offset the rudder considerably, but English designers have not followed this lead.



Maple Leaf III, the Thornycroft hydroplane that has done over 56 miles per hour.





The exhibition before the races. Ursula is seen at the lower right hand corner of the center group and Maple Leaf III is at the farther right hand corner of the same group.

Maple Leaf's most direct rival is the Duke of Westminster's Ursula, undoubtedly the fastest displacement boat afloat, and one which even now, despite her two years' racing, should have no difficulty in holding her own in broken water. It has had to be admitted, however, that for short distances and on the smooth water generally prevailing at Monaco, Ursula with her seven tons displacement is in considerable danger from the newer hydroplanes. Her owner was so convinced of this danger that with the hope of retaining the Coupe des Nations, he ordered the hydroplane Brunhilde built. At the last moment it was considered impossible to tune her up in time, and the motors were taken out and replaced in Ursula.

No changes have been made in Ursula's hull other than the fitting of a deeper and larger rudder, with the intention of making the turns shorter. The motors are exactly the same; overhauled, naturally, and with the bearings taken up, but unchanged in any essential. They consist of two groups of twelve cylinders each mounted side by side, having a bore and stroke of  $7\frac{1}{4}$  by  $7\frac{1}{2}$  inches. The dimensions are sufficiently near those of the twenty-four cylinders aboard Maple Leaf to make racing keenly interesting.

By the side of the two Britishers, Cocorio II will merely figure as an also ran, for although she put up an average of 28.3 miles an hour in last year's Championship of the Sea, her 120-horsepower Brasier motor will not stand comparison with the 750 to 800 horsepower groups of the English craft. The French will look to Clement-Despujols to uphold the national honor. She is a hydroplane designed and built by Despujols, on the Seine, and intended to receive a couple of Brasier motors. But at the last moment the motors proved unsatisfactory, and the designer hastily secured the use of a four-cylinder Clement-Bayard motor taken out of a dirigible balloon. There is not much reason to be dissatisfied with the power plant, for if there is only 210 horsepower instead of the

300 expected from the original motors, the power should be there when wanted, for the motor has proved its value afloat.

Despujols still has hopes of holding the mile and kilometre records, and counts on getting close on sixty miles an hour out of his craft. The hull of the Clement-Despujols, as the boat has been named, after the two men responsible for its production, is a hydroplane with a pronounced step, being a development of the Duc of 1909 and the Brasier-Despujols of 1910. Like this latter boat it has a cigar-shaped stem, its greatest beam at the step is considerably narrowed immediately aft of the step, and is absolutely flat-bottomed astern. The differences are a slightly more rounded section forward and slightly less beam aft of the step.

La Fleche is a last year's failure remodelled. Last year her owner had the original idea of mounting a long narrow hull on an absolutely flat-bottomed box having a depth of about one foot. The hull proper merely served to carry the motor and the crew, while the float was to skim over the surface of the water. Naturally the depth of the float was decreased at the bow to give a fine entering edge, but the width was not very much reduced. When trials were carried out it was found that

the boat did not always rise above the waves, but shipped large quantities of water on the deck and had a decided tendency to plunge down bow first. Thus, to prevent her being dragged down, the space between the bow and the edges of the float has been built in for a length of about three feet, with the intention of preventing the bow shipping water and being submerged. Further, a much more powerful motor has been fitted, for it is believed that the power originally available was not sufficient to get up the speed necessary for skimming. Up to the present trials have only been made on the river Seine, where the boat showed a satisfactory turn of speed, then went to the bottom when her motor was suddenly cut out. The designer vaguely attributed the mishap to gyroscopic effect, and



Above, the three Gregoire entrants—note the long stroke motor in the middle one; below, Pik As VII, a German monoplane.



The sterns of Maple Leaf III and Lürssen-Daimler. Note the combined rudder support and strut, the interesting double system of rudders and the extension of Lürssen-Daimler's underbody.

is not at all sure that the same thing may not happen again if the motor is suddenly stopped.

Of the first-class racers there are eight entries, but only one really outstanding boat. It is Miranda IV, designed by Sir John Thornycroft and handled in the races by Mr. Tom Thornycroft. It will be surprising if she does not show herself the fastest boat of the series, for she has been very carefully prepared for the races, her motor is in fine condition and she is well handled.

With the exception of her bow, there is little in Miranda that is common to Maple Leaf by the same designer. Her step is fully amidships and very shallow, the greatest beam being on the waterline; then the boat is narrowed to a remarkably fine stern, with the bottom kept almost flat. Her under-water section is quite distinctive, for whereas the other hydroplanes have a very broad flat stern, Miranda has very little support aft of the midships section. The mounting of the screw immediately ahead of the rudder post and in the same vertical plane as this latter, the base of the rudder post receiving the extremity of the

propeller shaft, is one of the features that she has in common with Maple Leaf. The motor employed is an eight-cylinder Thornycroft with its cylinders set in a very wide angle V, and having a bore of 4 inches and a stroke of 7 inches. In her trials the boat has attained a speed of 48 land miles an hour.

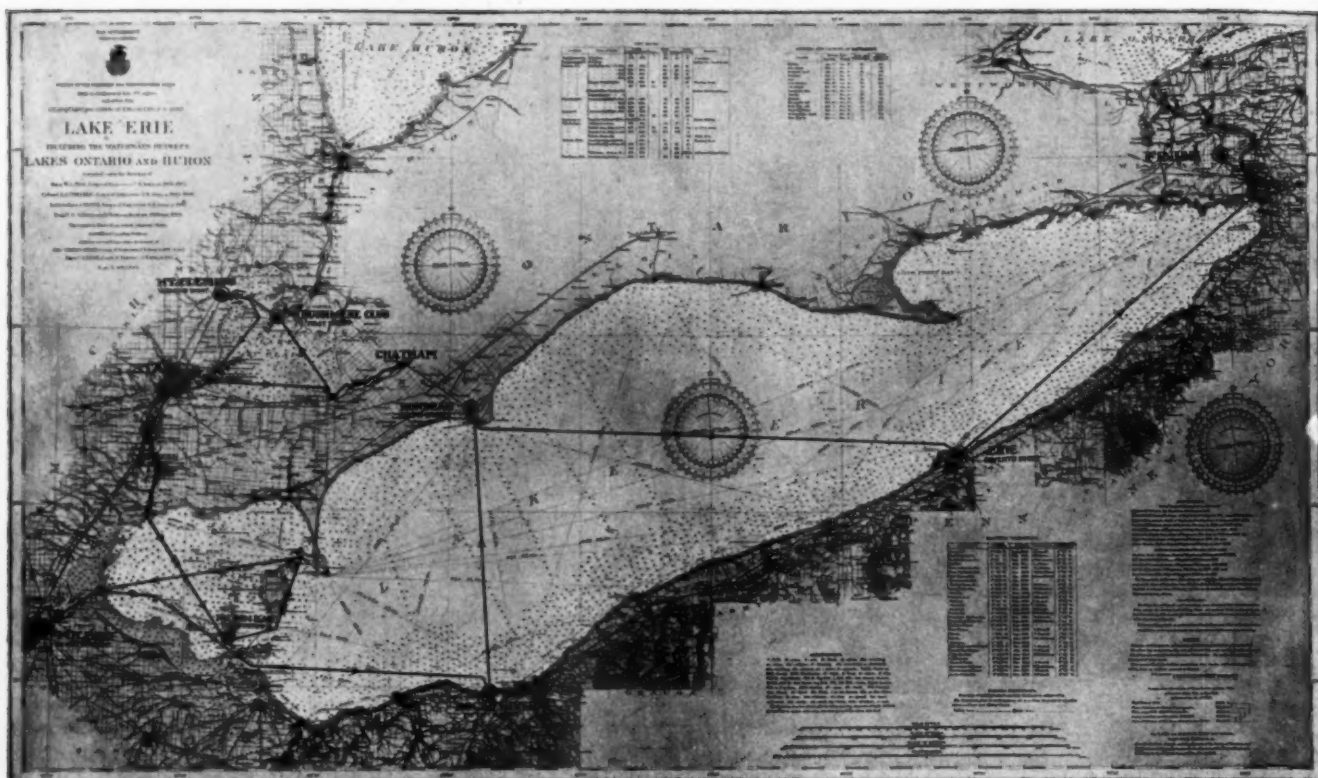
Except in very rough weather it is doubtful if Cocorico II will be able to hold its own with Miranda. The French boat is a last year's production, probably one of the finest displacement craft ever built by Despujols, but she has not got the turn of speed necessary to match with such a hydroplane as Miranda under fair weather conditions.

Sigma-Labor, so far as hull is concerned, is a diminution of Clement-Despujols, and although entered in the racer class, has really been built as a fourth series cruiser. Her motor is a Labor four-cylinder long-stroke aviation type having a bore of 5 1/10 inches and a stroke of 8 inches. Labor V is similar, so far as the power plant is concerned, but has an altogether different type of hull, being a hydroplane without a step, having  
(Continued on page 72.)



Above at left, the stern of Miranda IV; on right, Fleche, showing the possibilities of the French imagination; below on left, the stern of the same boat and on right, Kangaroo, a light single step hydroplane.





The course of the Scripps Eight Day Reliability Cruise to be held by the Great Lakes Power Boat League.

# The Scripps Reliability Cruise.

An Eight Day Race, the First Annual Event of the Great Lakes Power Boat League.

A Novel Cruise Fashioned After the Popular Automobile Reliability Tours.

**A**N interesting novelty in the line of long-distance cruising races will be conducted this year by the Great Lakes Power Boat League. This will be the first annual cruise of this association, and will be run similarly to the well-known automobile endurance contests.

Starting at Detroit August 7th, and ending at Buffalo on the 14th, the race will be run in eight stages, the boats checking in at the end of each day's run before a certain set time, in order to avoid penalization. For every minute after the expiration a three-minute leeway, an entrant that is late will be penalized one point for each minute. Any work done in the way of repairing, replacements or adjustments will be penalized at the rate of one point per man per minute or fraction, and if this work is done by anyone other than the operator or mechanic, the penalty will be at the rate of two points per man per minute.

In order that penalties may be imposed fairly, each contestant shall suggest and carry an observer subject to the approval and instructions of the cruise committee.

Prior to the start, each contesting boat will be given a trial run, and the committee will decide the miles per hour that the boat will have to maintain throughout the contest. At the close of the cruise, the boats will be submitted to the committee, and besides the penalties already imposed others will be counted against the boat according to a fixed table which covers every possible break or failure, other than those from outside sources, that may occur to the boat or its power plant.

It is seen, therefore, that the object of the cruise is to place a penalty upon defective design, materials and workmanship and to promote the building of re-

liable boats and engines. The idea is as possible of successful application in the marine field as it has been in that of the automobile, and the novelty of it alone should insure its popularity.

The course is shown on the chart at the top of the page. The start will be made from Detroit, and the first day's run will lie across Lake St. Clair to the Thames River, up this river to Chatham, down the river again and across to the Rushmere Club, the first night's stop. The next day's run is a short one to Mt. Clemens, the second night stop, but the run of the third day makes up for this in distance, as it lies through Lake St. Clair, the Detroit River and the Eastern end of Lake Erie to Put-In Bay. The next day's run lies around Pelee Island, back to Toledo, the fourth night control. Rocky River, just west of Cleveland, is the next stop, and Rondeau, directly across Lake Erie, is the sixth night stop. The seventh day's run is practically a B-line to Erie, Pennsylvania, and Buffalo, the finishing point, will be made the day after.

To be eligible for the cruise the entrant must be a member of a club affiliated with either The Great Lakes Power Boat League, the American Power Boat Association or the Western Power Boat Association, and applications for entry will be received up to July 15th. These should be addressed to H. H. Boggs, 44 Congress St., East, Detroit, Mich.

While not a non-stop run in the usual sense, motors of all boats must be kept running throughout each day's cruise, from the time of starting until the boat has been checked in, with the exception of stops made while taking on gasoline or when making repairs, when no penalty other than that for the repairs, will be imposed. All other stops will be penalized at the rate of one point per minute.



The Scripps Trophy.



# Racing Outlook for 1911.

**British International, Bermuda, Halifax Reciprocity Race and Other Speed and Ocean Contests. The Remarkably Rosy Prospects for a Racing Season Unprecedented in the History of the Sport.**

**W**E are on the eve of a new epoch in speed-boat racing—the age of the hydroplane, with its speeds undreamed of even a year ago. How different is the situation now from what it was at this time last year, when we hoped that someone would build a boat to defend the Harmsworth Trophy. Not that we had any grave doubts as to Dixie's ability, but we merely thought she needed a team-mate. Nobody took the hydroplane seriously enough to build one for the occasion, and when later on the reports began to come in from the trials of Miranda and Pioneer, our respect for the veracity of the English was in inverse proportion to the knots reported.

With six or more boats actually building at the present time, the situation shows none of last year's apathy. Dixie and the boats of her class, as international defenders, are now generally conceded to be archaic, as practically every one of the new boats is, in a broad sense at least, a hydroplane, with estimated speeds far in excess of Dixie's thirty-six miles.

The elimination trials to be held on August 16th, 17th and 19th promise to be just as interesting as the International series a week later. Commodore Melville and August Hecksher, of the Motor Boat Club of America, have joined forces with F. K. Burnham, owner of Dixie, and Vice-Commodore of the same organization, and this syndicate is building a boat planned by Clinton H. Crane, the designer of Dixie. In fact, we understand that two boats are being built to the same design, which is a sort of a refined V-bottom similar to the Fauber type with the steps of the underbody smoothed out. The syndicate boat will be equipped with Dixie's engine and a duplicate of it now under construction, and it is said that the second boat will be equipped with a triple power plant.

Albert E. Smith's Elco plane, building at the Electric Launch Company, is nearly completed, and great things are expected of it. She is equipped with two specially designed and constructed Standard motors of 300 h.p. each and with such a brace of kickers she should saunter along close to 50 miles an hour.

Another boat well under way at the Electric Launch Company's yard at Bayonne, is a Fauber hydroplane for J. Stuart Blackton. She is a 36-footer of the multi-step type, and will be driven by twin engines. Mr. Blackton is now in the South racing his Elco express tender Vita.

The Atkin-Wheeler Company is building a new boat for T. F. Chesebrough, the owner of Restless, and into this boat we understand 625 h.p. will be crowded. Besides this one the same company is building another boat for Commodore Melville and August Hecksher. The new boat will be called "Nameless II," and is to be a 26-foot hydroplane in which two of Nameless' engines will be installed, aggregating 250 h.p.

Besides these, it is said that Harris Hammond may enter "R. G. E." or build a faster boat at the Rice Gas Engine Company's works, and it is also possible that Commodore Pugh of the Pistake Yacht Club will enter his new 32-foot Fauber hydroplane with its three 150-h.p. Emersons.

Well, that makes eight or perhaps nine boats, and were it not for certain well-established axioms such as "Pride cometh before a fall" and the "law of the cussedness of things in general," we should feel very much like patting ourselves on our national back.

The Royal Motor Yacht Club and the British Motor Boat Club have both sent in challenges, and one of their boats has already been determined. This is the new Maple Leaf, Mackay Edgar's 40-foot Thornycroft hydroplane, which is said unofficially to have made 49½ knots, or 57 statute miles, per hour. That the Duke of Westminster will send the other challenger is generally conceded, and Pioneer is the only one of his boats that is eligible, Brunhilde and Ursula both being above 40 feet. But the Duke is a progressive sportsman, and may have a dark horse up his sleeve.

The Illinois Valley Yacht Club will conduct the Third Annual Regatta of the Western Power Boat Association at Peoria, and we may depend upon it that these Middle Western sportsmen will make things stir this year at the Monaco of America. There will be more than usual interest in the events at Peoria, as there are already eleven entries for the 40-foot class alone, five of which are boats built for the British International. Thomas H. Webb, the racing manager, informs us that the date has been changed from August 8th and 9th to July 25th and 26th so that the visiting boats may have time to reach the Thousands Islands before the Gold Cup races on August 8th and 9th.

The Mississippi Valley Power Boat Association, the other organization that has done so much for racing in the Middle West, will hold its annual Regatta at Dubuque, Iowa, on the 4th, 5th and 6th of July. Commodore Pugh's Fauber hydroplane and Carl G. Fisher's Seabury 40-footer are both expected to be present, and the proposed meeting of these two boats is causing much speculation, as Fisher's boat is guaranteed for 35 miles, and the 400 h.p. in the 32-foot hydroplane is expected to do even more.

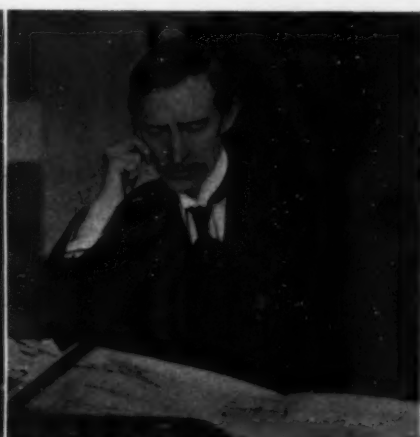
The Thousand Island Yacht Club and the Motor Boat Club of America have each challenged the Frontenac Yacht Club, under whose colors Dixie won the Gold Cup last year. There may be, and in all probability will be, other challengers, as the list of entries will not be closed until ten days before the race.

The Bermuda race will be the first important cruising race of the season, and will be conducted this year by the Motor Boat Club of America acting in conjunction with the Royal Bermuda Yacht Club. The start will be made on the 17th of June from the Brooklyn Yacht Club at Bensonhurst, but as entries may be submitted up to within one week of the start, it is impossible to say with any certainty what boats will be entered.

There is a possibility that the government will detail a torpedo boat escort for the race, a feature that may appeal to some, but of which we fail to see the necessity. Four years ago, when the race was first run, it was considered a big undertaking, and one to be attempted by only the most daring skippers. But the run has been made



Clinton H. Crane, designer of the famous Dixie and the new monoplane of the same name.



Two rival pioneers—Sir John Thornycroft and W. H. Fauber, designers of the two most famous types of hydroplanes in the world.

so frequently since then by motor craft of all sizes that the 670-mile course has lost whatever terrors it may have had originally.

Among the probable entrants for this year's race are the 82-footer *Sybilla II*, owned by J. F. Betz of Philadelphia and built and equipped with Craig engines by the Mathis Yacht Building Company of Camden, N. J. The Whittlesey 75-footer building for A. W. Teel should be finished by the middle of this month, and is a possible entrant, as is also Caliph, M. E. Brigham's Havana racer. Samuel Cochrane's *Eronel*, winner of last year's Bermuda race, is also cited among others as a possibility, although we understand she is already in Bermuda waters and may not return in time to enter.

Interest in the Halifax Reciprocity Race for the William Randolph Hearst Trophy is still growing, and Chairman Bentley of the Regatta Committee of the Brooklyn Yacht Club reports numerous suggestions and inquiries as to the course and conditions, from the owners of many eligible craft. Several courses were suggested and shown on the chart in the last issue of *MoToR BoatinG*, but it has been decided, as was also suggested last month, to let the contestants choose their own courses, which it is believed will put a greater premium on seamanship. The Long Island Sound Course, however, has been ruled out, and all contestants after starting from the Brooklyn Yacht Club will be required to round Ambrose Light Ship, via Ambrose Buoy No. 24, and from this point will be left to their own devices.

The upper limit for the size of boats eligible for the race has been placed at 80 feet, and after considerable discussion the lower limit was made 40 feet instead of 45 feet, as had been suggested by many. Seaworthiness is not of course dependant on size, although the comfort of the crew depends more or less upon it. An over-all length of 40 ft., however, should provide sufficient accommodation, and considering that there are so many eligible boats between the 40- and 45-ft. marks, this provision seems a very desirable one. There will therefore be two classes, one for boats from 40 to 60 ft. and the other for those from 60 to 80 feet in length.

The method of carrying gasoline was another question that brought forth quite a lot of discussion and finally, in view of the fact that ocean racing is now an old enough sport to have educated those interested in it, in the fundamental points which must be observed for safety, it was decided to allow the contestants to carry their supply of fuel according to their own ideas, provided the arrangement passes the supervision of the committee. If carried in separate cans not actually built into the boat, these must be secured in a thoroughly substantial manner.

Although a number of probable entrants are awaiting the final draft of the conditions governing the contest before actually entering their craft, the following boats are entered for the Reciprocity Race: *Caroline*, the last year's Havana racer, owned by Mr. M. F. Dennis; *Cornet*, a new boat building for A. C. Shilsburg; *Berneyo*, Mr. A. W. Granbury's winner of the Havana race; B. S. Mill's *Boffin II*, another new boat; and in all probability, *Snapshot III*, Mr. J. B. Lindemann's new 40-footer. *Georgiana II*, owned by W. G. Coxe, and Samuel Cochrane's *Eronel II* are also probable entrants. The Royal Nova Scotia Yacht Squadron has backed up its interest in the

event by offering a trophy for a return race, and both this club and the Waegwoltic Club are preparing a royal reception for the visiting yachtsmen.

Another feature of the Brooklyn Yacht Club's Programme for 1911 is the series of weekly races. These races will be open to all boats of recognized yacht clubs, and there will be three classes, as follows: The first for boats between 50 and 70 feet in length, the second for boats between 30 and 50 feet in length, and the third for open boats up to 30 feet over all. Neither speed nor semi-speed boats will be allowed to compete in any of the classes.

The Marblehead race has always been a popular event, and although the number of entries fell down somewhat last year, this may have been due more to a lack of interest on the part of the promoters than to any falling-off of public interest. The Motor Boat Club of America will handle this end of the event this year, and it is possible that this body will send a committee to Marblehead to officiate at the finish.

What promises to be one of the most interesting of the season's cruising events will be the Reliability Cruise of the Great Lakes Power Boat League for the Scripps trophy. This will be run somewhat like the automobile endurance contests and its novelty in the marine field should make it popular. As this event is considered at length on another page, it is unnecessary to deal with it further here.

The Camden Motor Boat Club will conduct a new ocean race this year for boats of from 30 to 50 feet over all. The race will start on August 4th from the clubhouse of the New York Motor Boat Club and the course will lie "outside" to Camden, a distance of 225 miles. Thomas Fleming Day has offered a trophy for the race, and the Camden Club has put up a silver cup as a time prize.

The second annual ocean race of the Yachtsmen's Club of Philadelphia will be held on July 8th. This year's course lies from Atlantic City to Scotland Lightship, thence to Fire Island lightship, and finally to the clubhouse of the Yachtsmen's Club at Philadelphia. This, so far as we know, is the only ocean race that this club will conduct this season. With a reputation for its initiative and success in conducting races of this kind the success of this season's run is already assured.

The race from New York to Albany and return will be held again this year by the New York Motor Boat Club on July first, and as the entries are restricted to boats under forty feet, offers the principal opportunity of the season for the little fellows to show what they can do.

The eighth annual Block Island race, another popular event with the smaller boats, will also be held again this season by the New York Athletic Club, but up to the time of going to press nothing definite has been decided or announced in regard to it.

The annual carnival of the National Association of Engine and Boat Manufacturers, which was held on the Hudson last year under the auspices of the Motor Boat Club of America, will be held this year by the same body at Huntington Bay, L. I. It will be remembered that much difficulty was experienced and a large percentage of the boats entered were actually disabled from floating debris at the last year's regatta, and the change to Huntington Bay is probably to avoid a repetition of these accidents.



The club house and anchorage of the Royal Nova Scotia Yacht Squadron, the finishing point of the Reciprocity Race from New York to Halifax.





A pair of 300 horse power, double acting Standard motors installed in a torpedo boat owned by the Austrian Government.

## Large Gasoline Power Plants.

**What Is the Limit of Power Beyond Which It Is Impracticable to Install a Gasoline Plant ?  
The Factors Which Limit the Size of Cylinder and the Total Horse Power Output.**

*By Wm. Washburn Nutting.*

**H**OW big can a gasoline motor yacht be? Several months ago statements of the views of several prominent architects on this problem were printed in these columns, and it was the consensus of opinion that in the solution of it the engine is the governing factor.

"Judging from the results obtained from engines already installed," said one, "we are not inclined to recommend the installation of any single unit of over three hundred horsepower, and are in favor of units of not greater than one hundred and fifty horsepower. It would seem, therefore, that the practical limit of size of vessels equipped with gasoline engines is not much above 125 feet."

Another of the architects said that while it was perfectly practical to build motor yachts of one thousand tons, or about 240 feet overall, by employing three motors of 500 h.p. each, the problem of obtaining and carrying the large quantity of fuel necessary—about 24,000 gallons—would alone make such an installation undesirable, and that he would not recommend the gasoline motor for use in boats over 100 feet long.

Still another of the experts said at that time that while there were many arguments in favor of gasoline for the large installations, the cost of fuel alone is sufficient to keep the size at about its present limit.

These opinions are characteristic of the sentiment on the subject, and it would seem, therefore, that the cost of fuel and the present limit of practicability of the gasoline engine are the determining factors that govern the size of the gasoline motor yacht. The gas producer plant and the oil engine will doubtless play important roles in the future, but that is another matter.

Let us first consider the design and construction of the motor, and try to determine whether or not there is a limit of size beyond which it is not advisable to go, and if so, what this limit is.

Although the thermal efficiency of an engine is of course reduced by any radiation of heat, the extremely high temperature within the cylinder makes the cooling of the cylinder walls an absolute mechanical necessity. In the case of the smaller engines this is a comparatively simple matter, but as we increase the size of the cylinder, the problem becomes more complex, and there comes a point where a much more elaborate cooling system is necessary. In the former case, the parts are small and light, warping due to variations of temperature is negligible and the piston is cooled sufficiently by conduction through the walls. It is sufficient, therefore, to water-jacket the head and walls of the cylinder.

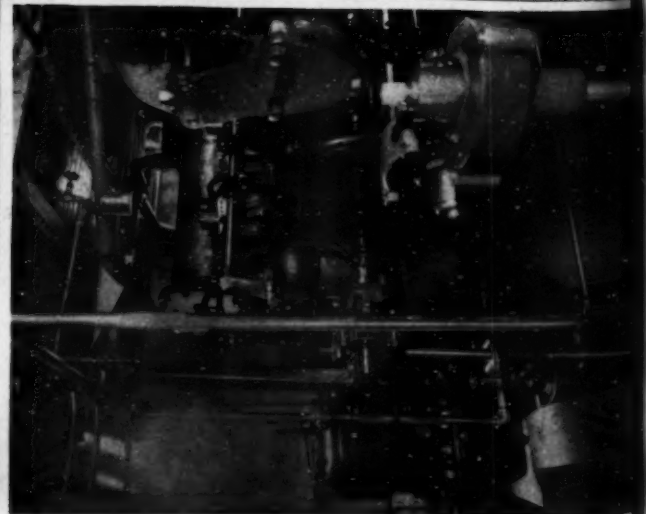
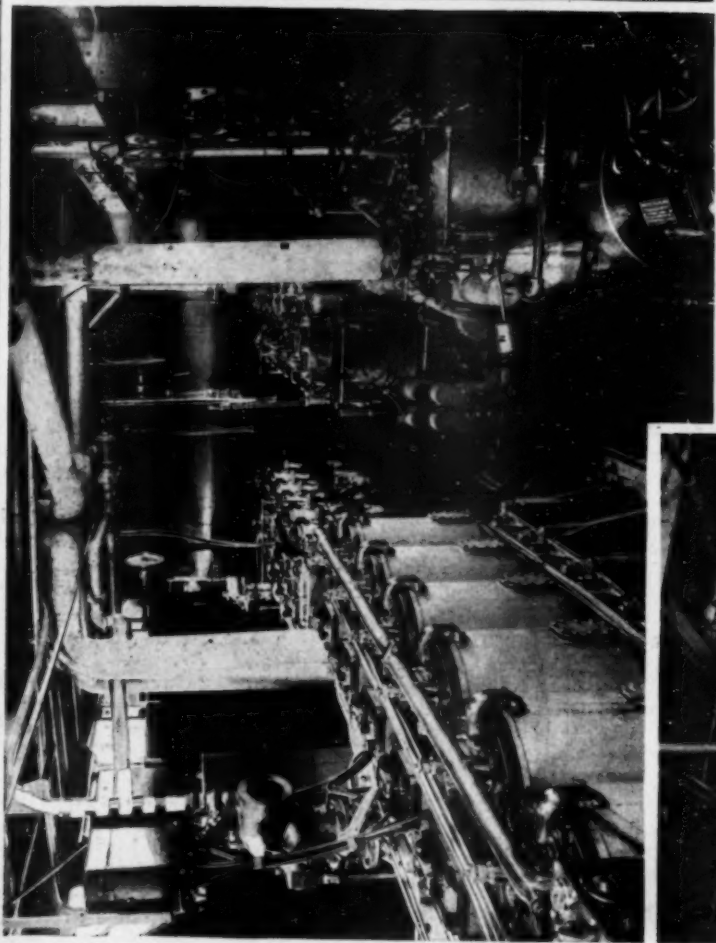
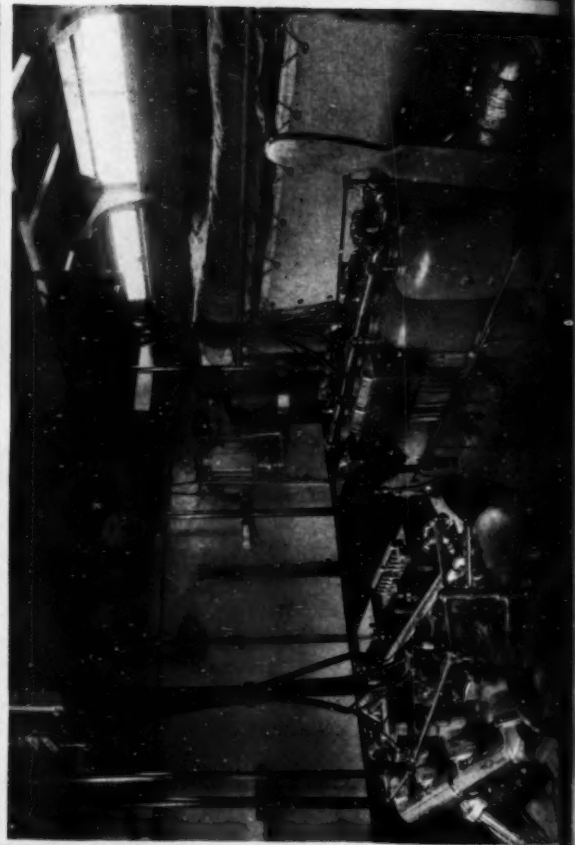
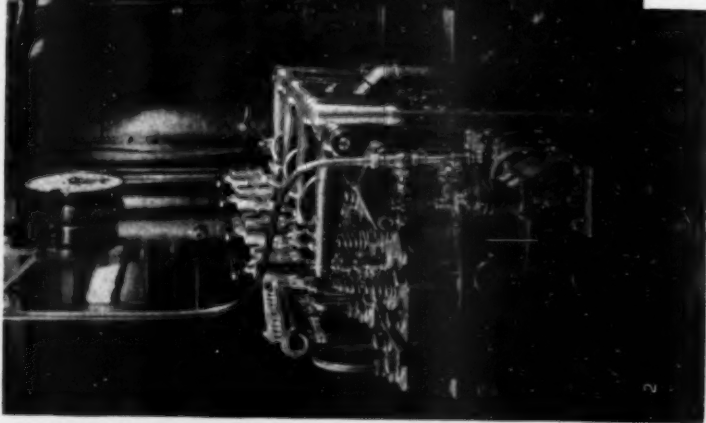
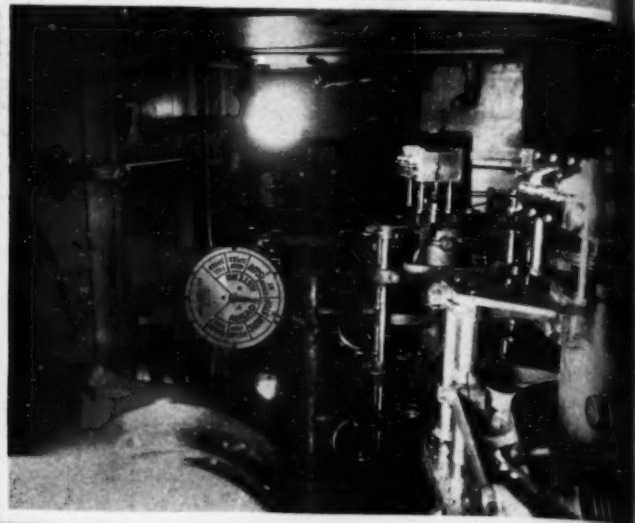
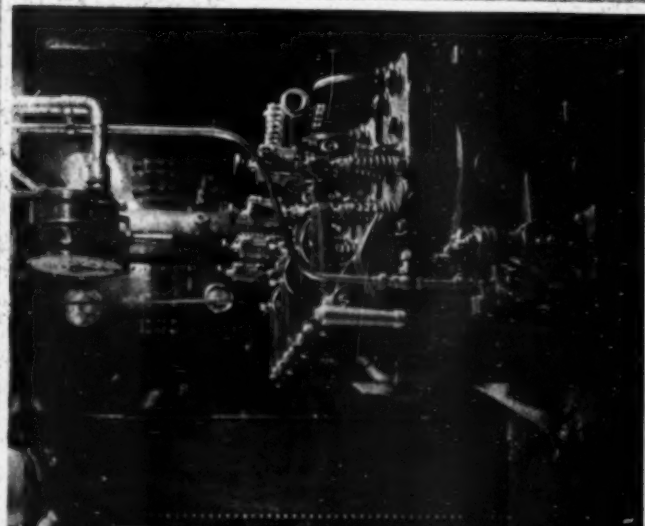
With the very large engines, on the other hand, the cooling system must reach every part that is in any way subjected to the high temperature of combustion, in order to maintain a steady and not excessive heat throughout the whole. Not only does this apply to the cylinder walls and valve passages, but to the piston as well; and, in double-acting engines, even the piston rod must be directly cooled.

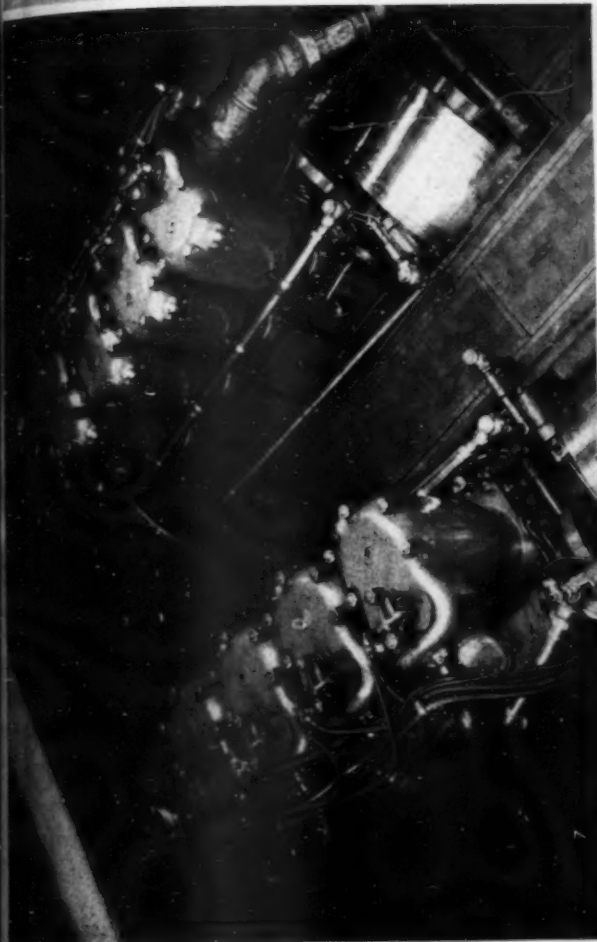
This necessity greatly complicates the castings, as it demands intricate coring in places where it was entirely unnecessary in the smaller sizes, raising the cost of construction considerably and in like proportion affecting the price of the finished product.

The problems of ignition and flame propagation, in order that the charge may be burned quickly, are other considerations that are affected directly by the size of the cylinder. As this is increased, the larger volume of gas takes longer to burn, necessitating either a larger spark or preferably simultaneous ignition at several different points in the cylinder. The desirability of burning the charge as quickly as possible in relation to the stroke is evident in that it obviates the necessity of great spark

*(Continued on page 12.)*







**The power plants of a number of the largest motor yachts afloat.**

1—Whirlwind's engine room, showing her three 136-175 H. P. Speedway gasoline motors. The smaller motor shown at the right drives the generator and pumps. 2—The two four-cylinder, 8½ in. Craig engines installed in Tekla. 3 and 5—Two views of the engine room of Alacrity, showing her two 300 H. P. Standards and one of her pumping and generating sets. 4—The two four-cylinder, 6x6 in. Speedways installed in Manchonac. 6—The fuel tank in Josephine and her two engines. 7—The two Lamb engines of Wilanida. 8—Allegro's three W. & M. motors. 9—Allegro's three W. & M. motors.



advance with the attendant additional work of compressing the partially burned charge, or in slowly turning engines prevents the inordinate loss of heat through the exhaust, as would be the case were the burning continued throughout a great percentage of the stroke.

There are other considerations, such as that of lubrication, but in regard to these, as with ignition, we can only say that the larger the cylinder the more elaborate the system needed. But considering the problem of cooling, it would seem advisable to keep the size below the point where it becomes necessary to cool the piston, valves, etc. It is impossible to determine arbitrarily this limit of size, but present-day practice would indicate that a bore of from 9 to 12 inches and a stroke of from 10 to 14 inches are the extreme dimensions for a cylinder that may be cooled by the ordinary system.

At this point some of the large oil-burning Diesel engines might be cited as arguments against these conclusions, as some of the later ones have been built with cylinders developing 1200 h.p. each, but we must remember that these are very slow-turning engines, in which the heat of combustion is not excessive. The fuel is injected into the cylinder and is ignited by the temperature due to compression, without any further means of ignition. Combustion is more gradual, and there is not the excessive rise in temperature due to suddenly increased pressure as is the case in engines of the usual type.

Having decided on a cylinder about 10 x 12 inches as the practical limit, let us consider the question of total horsepower from the standpoint of economy, before proceeding with the engine.

Still considering only gasoline as the fuel, how far can we go in the total horsepower of our plant before the running expense becomes greater than that of a steam plant of similar power?

Steam is at present unrivaled in its economy at higher powers, due to the possibility of using it expansively. To obtain an increase in power, it is possible to run at greater boiler pressure with a comparatively slight increase in fuel. Increasing the power of a gasoline plant means increasing the size or number of the cylinders with a directly proportional increase in fuel.

Although the cost of gasoline makes the actual running expense of the motor greater than that of the steam plant, even at only moderately high powers, there are other considerations in favor of a gasoline engine that make it a much more desirable power plant than steam for the moderate sized yacht. For example, the first cost of the engine is considerably less than that of a steam plant. The fact that it is lighter and takes up less room, gives greater accommodation in a boat of a given overall length or makes possible the same amount of accommodation in a smaller boat. A considerably smaller engine room force is necessary than with the steam plant and its boiler, although automatic stoking or gravity feeding, where oil is used as fuel,

might tend to diminish this difference. No fuel is consumed before or between runs as is necessarily the case in getting up or keeping up steam.

As an interesting illustration of the above, a certain steam yacht, 130 feet overall, with four staterooms and two bathrooms, cost \$60,000 to build, and a 120-foot motor yacht with somewhat greater accommodation cost practically the same amount. While the cost of fuel for the motor yacht per month was \$720, that for the steamer was only \$500. But the total running expense of the steam yacht was considerably greater than that of the motor-driven boat. This was due principally to the fact that the former required a chief engineer, an oiler and two firemen, while the latter's engine room force consisted merely of a chief engineer and one assistant. The engines of both of these boats developed in the neighborhood of 400 h.p.

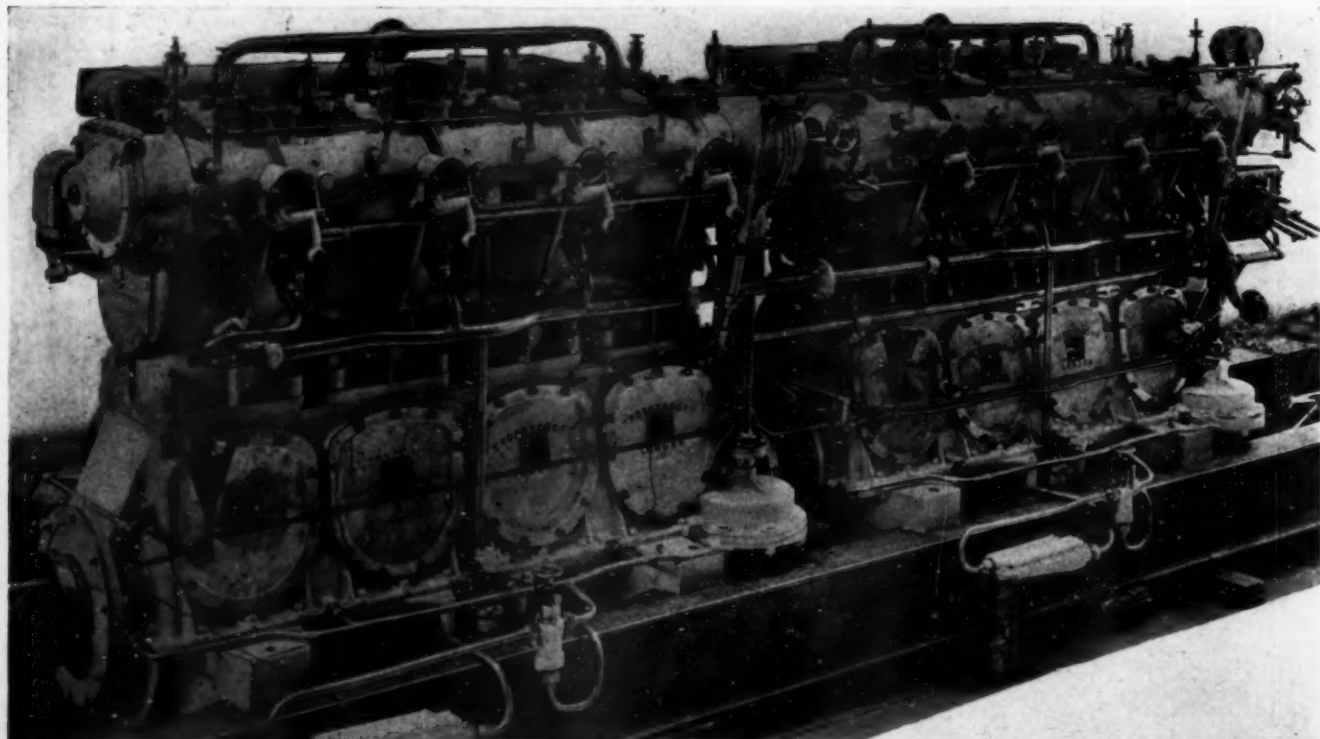
Let us consider the case of a motor yacht with three motors aggregating approximately 500 h.p. With gasoline in large quantities selling for ten cents a gallon and considering that the fuel consumption is at the rate of one pint per horsepower per hour, the cost of one hour's running would be \$6.25. Suppose now that she had a 500-h.p. unit on each shaft, the cost per hour would be three times what it is at present, or \$18.75, obviously an expense that no such considerations as we have given above could justify.

It is evident, therefore, that gasoline is not advisable for the very large installations. On the other hand, steam is obviously not suitable for small power, and there must be some dividing line between the two. But there are so many considerations besides those already given, such as convenience, cleanliness, etc., that our limit must be more or less arbitrary. The cost of running the 130-foot steam yacht was slightly greater than that of the 120-foot motor boat. Considering the powers of these the same and in the neighborhood of 400 horse, and granting that the advantages of gasoline are sufficient to warrant paying something extra for, we may place the limit in the neighborhood of 700 h.p.

With this limit established, and having also determined the limit for the size of our cylinders, shall we install an engine composed of enough cylinders to make up the total horsepower, or shall we divide the plant up into several units?

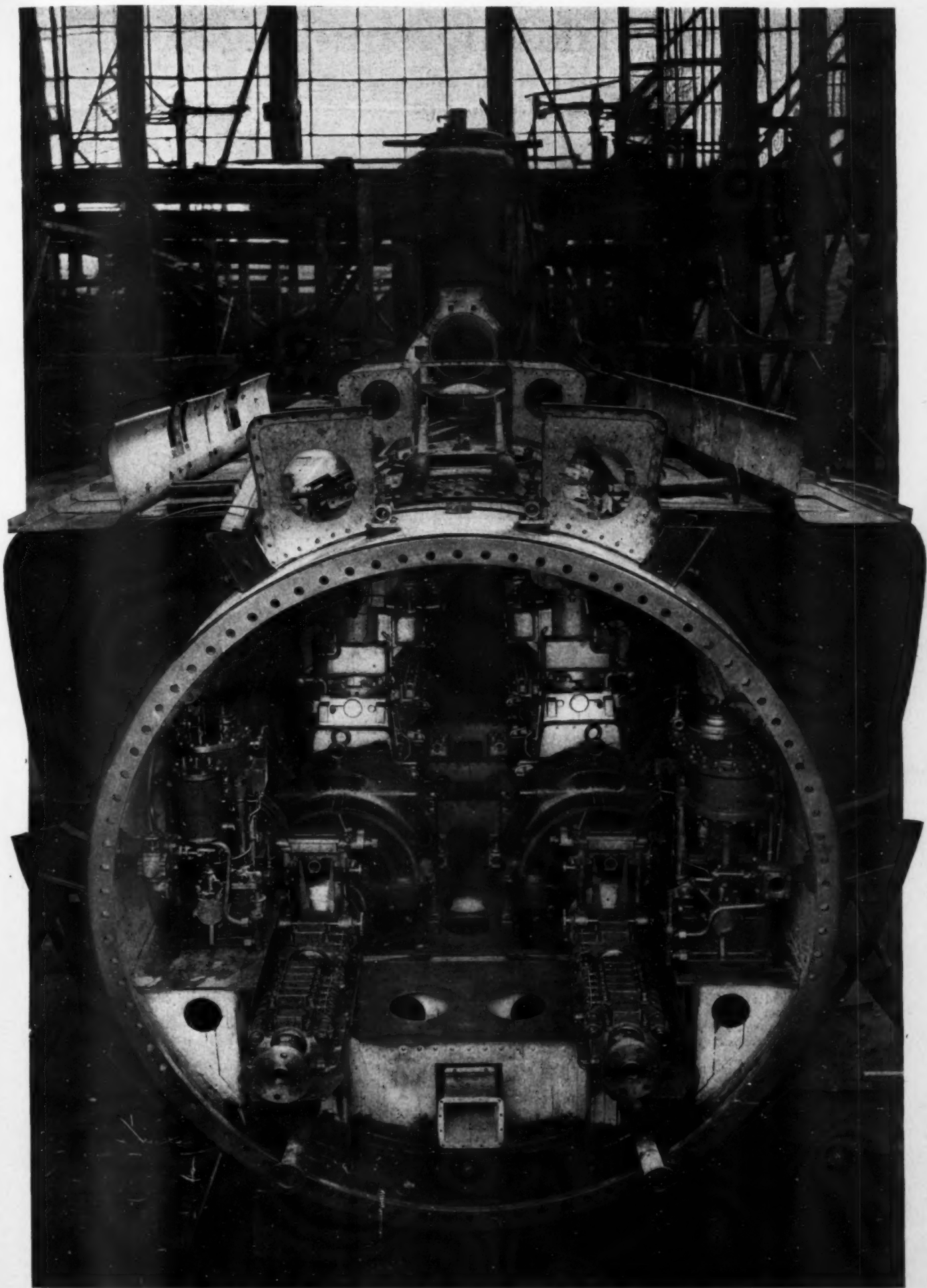
The former alternative is, of course, out of the question in a cruising boat, where available engine room length is limited, although in racing craft, such as Pioneer with her twelve-cylinder Wolsley engine, such an arrangement has proved successful. There are many mechanical difficulties, such as timing, carburetion, etc., that also argue against one engine of many cylinders, but the principal advantages derived from dividing the power into smaller units, are the following: The boat cannot be disabled by the failure of one of her engines, but may

(Continued on page 70)



An eight-cylinder Thornycroft submarine motor of 12-inch bore and 8-inch stroke that is rated at 400 h.p. on gasoline and at 350 h.p. on kerosene.





Big gasoline engines—the power plant of a German submarine installed before the two sections of her cylindrical hull were bolted together. The gasoline motors develop 450 h.p. and the two electric motors which are used when running submerged, are capable of 250 h.p. See photograph of submarine in action on page 35.

# Ventilating the Bilge.

The Importance of Air Circulation to Prevent Collection of Explosive Gases Beneath the Floor.  
A Precautionary Measure that Practically Eliminates a Common Source of Accident.

By E. W. Marshall.

Member American Society of Mechanical Engineers.

**E**VERY competent designer provides ample ventilation for the cabin, galley and engine room. But who ever saw a boat plan with any provision made for ventilating the bilge? Who in the world wants to ventilate the space under the cabin floor and the cockpit deck? You do, my friend, and I'll show you why.

Everyone knows that gasoline is volatile, and that when it is unconfined it changes into a vapor. But it is not so commonly known that this vapor is very much heavier than air. It is, in fact, nearly three times as heavy as air. If there is any gasoline loose around your boat, it settles to the bottom of the boat, gets under the floor and into locker spaces. If there is a leak in your gasoline installation, not only does the liquid run down into the bilge, but it volatilizes there, and stays there. But you haven't any leak? Of course not. But you sometimes spill some of the stuff when you fill the tank; sometimes the carburetor overflows a little. It all goes to the same place and stays there.

"There is always a little water in the bilge of my boat, so I'm not afraid of gasoline burning there," one man told me. If he will put some water and some gasoline in a bottle he can see for himself how absolutely unmixable they are. And the gasoline is lighter than the water, so it stays on top and has every chance to vaporize.

Another thing everyone knows is that this vapor mixed with air will burn, and under the right conditions, which, by the way, are likely to be present in the bilge, will explode if ignited. You would hardly want to stand around with a powder magazine under your feet, no more should you want to carry around any gasoline vapor under your floor. There is no need of doing either.

Many are afraid of their tanks, but they need not be. The tank can't explode unless it is empty! The presence of any liquid gasoline in the tank will insure it against explosion, for the vapor in it will be too rich. This vapor will burn at the vent if lighted, but will burn slowly and gently, just like the gas-jet in your room when it is turned down low. The bilge is much more dangerous than the tank.

We have often seen those who are afraid to smoke near their tanks (which can be done with perfect safety) light their cigars and then let their matches drop without the slightest thought as to where they will land. It is hardly necessary to state that the bilge is not the proper receptacle for burnt matches!

It is always best to have the magneto or

*Mr. Marshall, the author of this article, has established a reputation for himself as an expert on gasoline; and with his illustrated talks on the subject, given before many of the motor boat and automobile clubs throughout the country, has done much to dispel the popular fallacies and superstitions regarding the behavior and habits of this faithful, but much-slandered, servant.*

dynamo mounted as high as possible, and to have the distributor up near the top of the engine cylinders, so that the sparks from these parts of the electrical installation are

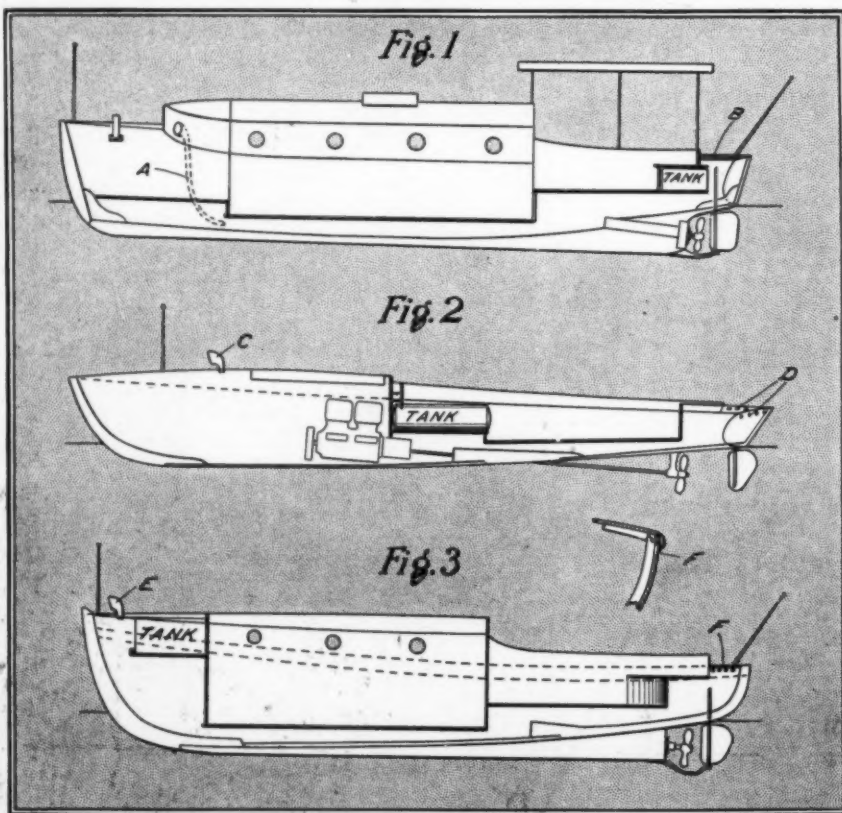
tube will do for this purpose. A continuous air space is left between the end of this tube, under the cabin floor and the cockpit deck to the space under the after deck. The after deck is not air-tight, but in this case is made of slats at B with open seams between them. Or, if this deck has any considerable area and must be made water-tight, a sliding vent may be provided which may be closed when desired.

The air entering the ventilator at the front will pass through the bilge spaces and out through the after deck. It requires but a surprisingly small quantity of air to do the trick.

In the runabout shown in Fig. 2 we have

a much simpler proposition. Boats of this type are nearly always provided with a ventilator hood, C. All that is necessary in this case is to see to it that this ventilator is placed far enough forward and that a path for at least some of the air which enters through it be provided under the floor boards and out through the stern transom or after deck or both, as shown at D in this sketch.

The raised deck cruiser with compromise stern and with tank placed forward, is shown in Fig. 3. A hood ventilator E is so placed in the forward deck that it furnishes a supply of air to the forward compartment. This compartment is shut off from the cabin proper, but has free communication through the spaces under the cabin floor and the cockpit deck with the space under the after deck. Provision for the escape of this air from this space is made by a few holes at F through the top sheer plank. If



Ventilating systems suggested for the trunk cabin cruiser, the runabout and the raised deck cruiser.

kept up as high as possible above the bilge.

I have been asked so often how the bilge may be ventilated that I will venture some suggestions. It doesn't do much good to raise the floor boards, especially when the boat is at anchor. The heavy vapors will not rise through such an opening. But it is easy to get a fore and aft draft through a boat, and not much trouble to so direct this draft through the bilge that it will sweep out any vapors which might otherwise collect there.

In order to illustrate some ways in which this may be done, three of the most common types of motor boats have been selected with their tanks in different relative positions, and these are shown in the sketches in sectional outline.

Fig. 1 shows a hunting cabin cruiser with its tank near the stern. In this case a funnel-like ventilator is placed in the forward part of the trunk cabin above the deck, and a tube A is run from it to a point under the cabin floor. An ordinary hose or a rubber

these holes are bored directly below the moulding or so placed that they are partly covered by the molding, as shown in the sectional sketch, no rain can get into the boat through them.

Openings might be placed in the wall of the after part of the cockpit and in runabouts, where the tiller passes through a hole in the transom, this opening might be sufficient to allow of a reasonable draft. The position of the after opening is not so important, but the forward one should be near the bow and should be provided with some device, as a cowl ventilator to insure catching the air and forcing it through the bilge.

None of these arrangements may meet your particular case, but it is believed that these suggestions will clearly indicate some way of providing for the ventilation of your bilge. The dangers attending gasoline installations are greatly exaggerated. It is only through the oversight of such matters of detail as this article points out that any trouble can arise.



# Organization of Motor Boat Clubs.

The Method of Procedure and Some Suggestions That Should Obviate the Usual Mistakes.  
Lessons That Have Been Learned From the Successes and Failures of Other Clubs.

By Arthur C. Mack.

**W**HAT are the benefits of organization in motor boating? Which principles are most likely to result in successful federation? How are the financial problems best met? These are questions of vital moment to hosts of motor boat owners, especially at the beginning of another active season.

The benefits of organization are so firmly established, that among the thousands of motor pleasure craft, there are but few which do not fly the burgee of some club. There is a reason for this as every experienced follower of the sport knows. Club membership constitutes the yachtsman's credentials. While there are occasionally excellent men unallied with any association, and now and then undesirable men flying a club's colors, motor boatmen of standing are usually identified with their fellows. Before the tyro purchases his first boat, he would, therefore, do well to seek out and join a desirable club.

So many new organizations are being formed in all parts of the country and so many established organizations are failing to realize reasonable ideals, that it is profitable to consider the ways and means of successful club formation and management. In this paper the writer will not deal with questions confronting the great yachting organizations, such as the New York Yacht Club, Atlantic Yacht Club, or the like, nor with the purely racing associations, but rather with the usual club of from 50 to 200 members.

Many mistakes are made in forming new clubs, for inexperience is a costly teacher. At the start there is often more enthusiasm for the club than for the sport of which it is the organization. The ambition for a big membership is an almost invariable complaint. This paves the way for the greatest injury to any club—deadwood. The organization which has any considerable membership composed of non-boat owners is unsound. Seasoned officers all agree that about the last thing for which a good club should attain, is mere numbers.

It is unwise to establish too many clubs. In a community which would naturally support two fair sized clubs, it is usually unwise to form three or four smaller ones, unless by reason of inadequate space for moorings, two clubs in the same locality would be more comfortably situated, as far as water frontage is concerned. The benefits of centralization are obvious.

The Constitutions and By-laws of the leading and best established clubs do not differ materially. Indeed, many are almost identical. It is the almost universal inclination of organizers of a new club to believe they can improve on these constitutions. After devoting a great deal of gray matter to devising improvements upon the constitutions of the standard clubs, the amateurs usually terminate their labors by adopting the laws of the older organizations, and while in some instances local conditions necessitate changes, this is the wisest course, the older forms having been thoroughly tried out.

In drawing up a constitution, the following articles are, therefore, essential:

1. Name and location.
2. Object.
3. Officers.
4. Organization.
5. Committees.
6. Meetings.
7. Election of officers.
8. Powers and duties of trustees.
9. Duties of officers.

10. Duties of trustees and committees.
11. Appropriations.
12. Club signals.
13. Broad pennants.
14. Regattas.
15. Amendments.

Essential articles of a club's By-laws should include the following:

1. Notices.
2. Order of business.
3. Voting.
4. Election of members.
5. Discipline.
6. Resignation.
7. Roll number.
8. Roll number.
9. Yacht enrollment.
10. Gambling.
11. Cap and ornaments.
12. House rules.
13. Amendments.
14. Suspension of by-laws.

It is wise for every club to adopt the customary officers: Commodore, Rear Commodore, Vice-Commodore, Secretary, Treasurer and Fleet Captain, and also the usual Trustees, House, Membership, Finance and Regatta committees.

Having sketched thus briefly the benefits of organization and outlined the system of organization, it is profitable to consider the dangers which must be avoided and principles, which if adhered to, should bring the highest measure of success.

A well-equipped home is one of the first essentials to the success of every club. Herein lies one of the most serious problems in organizing a new club. Shore front and riparian property is usually expensive. Sometimes its price is prohibitive if the club is a small one. In this case an excellent solution of the difficulty is the purchase, or building of a floating club house. This may be moved offshore and permission obtained from the water front property owners to build a runway out to the house. In case the club is compelled to seek a new location the runway may be removed practically intact and the house towed to another location.

A club located on an eastern waterway, unable to finance the purchase of land, had built for it a flush-deck scow 25x50 feet timbered in every detail similarly to a first class brick scow, costing to construct, \$900. Upon this scow was built a tasteful two-story house with front veranda leading from the second story over an open deck directly beneath. On the first floor is a janitor's room, men's lavatory, locker room, work bench, stove, canoe racks and telephone. The second story, the assembly room, has a dancing floor. It accommodates a ladies' lavatory, officers' room, trophy cabinet, reading tables, piano, etc., and is provided with plentiful windows. The house has running water and electric light led from shore over a runway about 250 feet in length. This house cost to build \$1,000, the runway and gate about \$350. The total cost of the club's house was thus about \$2,250. Not a cent was paid for real estate. There were no leases. Six piles hold the house in position and a landing float is staked to its front, the cost of these fastenings being about \$100. Second hand scows or barges may be purchased at reasonable figures. Thus the Columbia University rowing management have as their headquarters, the old excursion barge Chester A. Arthur, secured at a cost of approximately \$1,000 and refitted. In purchasing a second hand scow there is always danger of deterioration and repairs which will cost

more than a new hull and thus extreme caution should be used in the selection.

With the club house built on land, the items of realty values, taxes, assessments, etc., vary so widely in different localities that even approximate figures for the entire cost could not be given profitably here. A long-term lease is often preferably to a direct purchase, but in New York City as in many other cities, a lease of municipally owned property is terminable at will within six months. As for the land-built house; exclusive of the property upon which it is erected, a comfortable, attractive and well-appointed home for a motor boat club in an Eastern state was recently built at a cost of \$2,500. The membership of this club exceeds 150.

In financing the home and equipment of a new club, a mortgage should, if possible, be avoided. If one is necessary, it should be for the lowest possible sum. With other kinds of property, a mortgage is often a desirable asset, making it more saleable. But the club house is not built to sell; it is a home to be kept, and a debt upon it often handicaps the members for years. The plan of selling stock, a specific instance of which is given later, is an excellent means of meeting the expense of a new house. It requires the sale of only 100 \$20 shares to build a \$2,000 house. If only 50 shares can be sold, then a \$1,000 mortgage should be easily taken care of by a club of 50 members.

Once the house is ready, it is almost axiomatic to state that the cost of maintenance hinges upon the judgment and attention of the club's officers. Their appreciation of the difference between the value of a "stitch in time" and "penny wise and pound foolish," their avoidance of wanton extravagance will determine the economy of management.

The club which has been already cited as having a floating house costs approximately the following amount to maintain during its fiscal year: It began last season with 35 members and enters upon this season with 50.

## Income.

Balance from preceding year.....	\$45
Initiation, 15 new members, at \$20.....	300
Dues (Entire year at \$12).....	400
Locker fees .....	60
Profit on telephone tolls.....	10
Income from other sources.....	25
	<hr/>
	\$840

## Disbursements.

Steward 8 months at \$35.....	\$280
Electric light .....	15
Water .....	10
Ice .....	5
Repairs and betterments.....	100
Purchase of stock from majority holder.....	300
	<hr/>
	\$710

Balance at end of year.....\$130

The income and maintenance of the other club already mentioned whose house is built on land, are approximately as follows:

## FIRST YEAR.

### Income.

Membership and Initiation fees and dues .....	\$1,400
5 per cent bonds, five year term.....	2,000
Surplus from café.....	600
Fees for hauling out boats.....	480
Locker fees .....	90
Surplus on annual ball.....	300
	<hr/>
	\$4,870

Disbursements.	
Building club house.....	\$2,500
Lockers, Marine Ry., Car, Winch.....	200
Floats .....	600
Steward .....	480
Extra labor .....	160
Light, heat, water.....	90
	\$4,030
Interest on bonds.....	100
Lease of property.....	600
Surplus, not counting mortgage.....	140
	\$4,870

(Initiation \$5; dues \$12; membership about 100.)

SECOND YEAR. Income.	
Second year's surplus.....	\$140
Initiation fees and dues.....	2,000
Fees for hauling out boats.....	850
Locker fees .....	150
Surplus from café.....	780
Surplus from annual ball.....	500
	\$4,420

Disbursements.	
Second year's lease.....	\$600
Steward and float man.....	960
Improvements to house and grounds...	800
Light, heat and water.....	120
Extra help .....	208
Launch and dink.....	425
Interest on bonds.....	100
	\$3,213
Surplus .....	1,207
	\$4,420

(Initiation raised to \$20; dues raised to \$16; about 150 members.)

Having thus considered the cost of acquiring property and maintenance, let us turn to the problems of management.

The evils which beset numerous clubs in greater or less degree may be grouped under these headings: mistakes in organizing a new club; ambition for big membership; too small dues; membership deadwood; too many and too severe rules of conduct; laxity of administration; kicking; laxity in business methods; carelessness in character requirements. These faults are most apt to appear in a newly formed club; not infrequently, however, they creep into the oldest and best organizations. Their existence or absence determines the reputation of every motor boat club, and it must be remembered that every club has its distinct character and individuality.

The business side of a motor boat club is frequently too much subordinated. No club can prove really successful if its business system is inefficient. When a club is started, initiation and dues are in many cases made too low. This is done to attract members and impose the least hardship upon those of limited means. While this latter is a commendable object, two dangers are at once invited. The income is insufficient to run the club and those who have no business to be-

come members find it easy to join. It is wise to map out carefully an annual budget in which all running expenses shall be liberally estimated. The income to meet this budget should be sufficient to keep the club's slate clean at all times and to leave a fair surplus in the treasury. Assessments in the form of simple cash levies, or in the more polite form of entertainments should be avoided as unbusinesslike and detrimental. They are certain evidences of mismanagement.

Too much red tape, too elaborate and severe rules imposed by the house committee, sometimes bring a club near to disruption. The happy medium of necessary rules with tactful handling of abuses, the correction of which requires no rules is one of the most difficult executive tasks, and a subject too big to treat here.

Laxity of administration has undermined many a club. A commodore who is not in the best sense, a head; a treasurer who is not prompt, thorough and systematic; a secretary who is not on the job at every meeting, are as detrimental as similar officers of a commercial organization who are incapable or unfaithful.

Loyalty is one of the fundamentals of a successful club. If there is reason for dissatisfaction, or dissatisfaction without reason, the club is certain to suffer.

Club activity in the form of frequent club and inter-club regattas, adds to the health of an organization. A league of clubs in the same vicinity is beneficial.

A large and talkative "rocking chair fleet" is a menace to the club's real fleet. Chronic kickers are worse than a nuisance.

But beyond all these considerations is one which is absolutely imperative to every self-respecting association of motor boat men—a clean membership. Investigation of the character of those applying for membership should not be, as it frequently is, perfunctory.

The writer believes that the average motor boat club is representative of the rare democracy and comradeship of the Corinthian spirit, but he believes this high standard could not be maintained were not the unwritten law of every decent club which prescribes all questionable persons from its premises, rigidly enforced. The club house should at all times be a place where members may bring women and children with perfect freedom. A bar should be avoided.

After having touched upon some of the things not to be done, it is profitable to consider some positive principals of club success. As strikingly illustrative of failures and successes, the system of a club organized on a somewhat original plan may be cited. This club was formed some years ago in a suburban town on the Hudson River. Its membership was drawn from about six adjacent communities. The organization started off with great gusto. Initiation and dues were put at a low figure. A big membership was the cry. The list soon ran up to a hundred. It was considered quite the thing to join. Tradesmen thought it a good idea to have their names on the roster. In almost no time the club was big—and loaded with deadwood. Then came the reaction. Enthusiasm waned.

Dues lagged. Debts grew. Dissatisfaction kindled. Meetings were deserted. Finally the motor boat owners awoke to find their club hard and fast upon the rocks. How they faced the situation presents an object lesson in sound motor-boat management.

A new organization was formed taking over the property of the old. At the outset, it was determined to put the association on a businesslike basis. The organizers were all boat owners, and they adopted a novel co-operative plan. This consisted of the formation of a dual body.

The corporation laws of the state in which the club is located, do not permit a club to issue stock. The new club was, therefore, organized both as a club and a company, each, however, having distinct lines of separation.

As a company it was incorporated with \$5,000 capital stock dividend into 250 fully paid non-assessable shares of \$20 each. \$2,500 of this stock was subscribed and paid for by the incorporators, and the old club's property taken over. It aims to confine the sale of shares to boat owners only. Of course in such a plan it must be evident that at the beginning some one individual (or individuals) puts up more than the rank and file. This was true in the above case and the surplus realized from the sale of shares is applied by the stockholding club members toward purchasing for the club treasury, part of the stock held by one member, who by carrying the bulk, enabled the company to secure its property without mortgage.

In dual existence with the company is the club. The President of the Company is the Commodore of the club, the Vice-president, the Vice-commodore, the directors the trustees; and so on. Every member joining the club must own, at least, one share of the company's stock. This constitutes an initiation fee. Mere ownership of stock does not, however, carry with it membership privileges of the club. Thus, if an undesirable person secures stock in the company, he is not entitled to membership in the club. The club dues are \$12 per year, payable semi-annually. These dues with locker fees, telephone tolls, etc., are sufficient to meet the expenses for electric light, water, heat, a first class steward, repairs, etc., and to leave a safe balance. All dues and fees go into the club's treasury, the club leasing the property from the company at a normal fee.

Besides rigid character qualifications, members are required to be boat owners. Every member thus has a direct interest in motor boating and a personal interest in the property. There is a spirit of loyalty and genuine interest, which makes the organization an almost ideal one. The growth has been sure and steady, about 40 per cent last season. The club has a live and popular commodore and its other officers are faithful to their duties.

It is hoped that the foregoing facts and principles of motor boat organization may be of assistance in the perfecting of new and old clubs alike, and thus add to the manifold pleasures of the rapidly growing devotees of this rare pastime.



A picturesque little inlet near Halifax Harbor, Nova Scotia, the finishing point of the Reciprocity Race for the W. R. Hearst Trophy.





La Vagante was designed not only for comfort but to withstand the weather to be met with along the New England coast.

## Something New and Unique.

La Vagante II, a Strikingly Original Motor Boat, as Interesting as She is Peculiar in Appearance.  
The Result of Her Owner's Ideas of What a Cruising Motor Boat Should Be.

By George Story Hudson.

**M**ARBLEHEAD, that famous New England yachting port, has seen many novelties during the past season, but it is safe to assert that the cruiser La Vagante II, owned by Justin H. Smith of the University Club, Boston, possesses more interesting features than anything in the way of a water vehicle to drop a mudhook in the snug harbor during the summer of 1910.

Mr. Smith had the La Vagante II built to meet his own ideas of a comfortable vessel. He has had wide experience and the features of the craft were the result. Mr. Smith wanted a big little boat, safe in any reasonable weather and with the maximum accommodations on a limited waterline. The design was pondered on for months before Mr. Smith awarded the contract to Britt Bros. of West Lynn, who conscientiously worked out details and furnished a remarkably strong and handsome boat which, immediately after leaving the yard, entered on a season of extensive cruising.

The yacht, in many essentials, resembles some naval craft of small dimensions and heavily armored, not to repel assault of missiles but the battering of ugly seas. Her forward structure is calculated to withstand any amount of pounding by green water without becoming strained or leaky. Amidships is a house ingeniously arranged and the after part of the craft is covered so as to perfectly balance the forward structure. She is a handsome boat notwithstanding the unusual arrangement and a prettier hull seldom has been created for a 35-footer.

In the bow is a tank holding 65 gallons of gasoline and abaft that is a refrigerator good for about 150 pounds of ice. Next comes the galley, 6 feet long, with cupboards on one side and shelving on the other, together with an enameled sink, a pump to the fresh water tank and another to the outside water. A rather large sort of table covered all around and above with sheet copper provides a stand for the alcohol stove, while below the table are about a dozen small drawers for knives, spoons, etc. The galley is 6 ft. 2 in. high at the after end and 5 ft. 6 in. at the forward end. It occupies the space beneath the sloping forward trunk.

This galley has a large hatch on top so that

the cook may have about 6 ft. headroom should he find it necessary to do a little stretching. There is plenty of elbow room and no one has yet been heard to remonstrate because the cruiser's culinary department is stuffy or ill-arranged. If need be, one man may sleep on the floor of the galley on the air bed which is provided as part of the equipment. No matter how heavily the craft rolls or pitches there is no danger of this occupant of the kitchen being tossed from his bunk.

Next comes the cabin with two side seats at the forward end, accommodating three each. Between these seats is a table that can be folded so as not to be in the way, or can be entirely removed and put under the cabin floor which is about 10 in. higher than the floor of the galley. The after part of the cabin is occupied by two chairs, one on either side. Each chair consists of a sort of long mahogany box large enough to hold a thin hair mattress, a pillow, sheets, blankets and pajamas. The chair itself consists of a foot-piece, seat and high back, each of which is a spring cushion covered with velours. The footpiece and back can be set at any angle, and at night are laid horizontally. The chair is then a bed 6 ft. long and 2 ft. 6 in. wide. Sitting in the starboard chair one can watch the compass, control the rudder, spark, throttle, whistle and bell; and by moving 4 or 5 feet one can raise or lower either the bow or stern anchor. The cables of these anchors are stowed in lockers.

Under the cabin floor where the chairs stand, is a tin-lined copper tank containing about 100 gallons of fresh water which is introduced through a tube opening high on the outside of the hull. The sides of the cabin consist of copper mosquito nettings on detachable frames. The forward frame on each side is a door with a hatch in the cabin roof above it so that one may enter without stooping. Inside of the nettings are waterproof curtains attached in such a way that no rain can beat in. When necessary spray boards are set into the frames between the curtains and the nettings.

Abaft the cabin is the motor room, 5 ft. 6 in. long, with closets and lockers for the storage battery, battery of dry cells, switch-board, tools, clothing, etc. One can walk completely round the motor and every part of the

machine is accessible. The remaining 8 feet of the boat are simply decked over, with large hatches giving access to storage compartments, drawers, etc. This deck has a chain around it and is provided with an awning so that five persons may sit comfortably in folding chairs when fishing or enjoying the panorama unfolded as the yacht east up the miles on cruises or afternoon spins.

At the extreme forward end of the boat is a mast that turns on a pivot. Two hinged yards are attached to the mast near the deck. When these yards are dropped they open out a sail intended to spread about 90 square feet of canvas. By means of braces or sheets, which run into the cabin, the sail can be braced to suit the direction of the wind and can be furled instantly from the cabin by hauling on the halyards and a sort of buntline or binding cord.

Such appurtenances as a toilet room, lockers for books and other joys of a meditated with electricity generated by the motor. One can go from the after deck to the forward deck either through the cabin or around it on the outside. The cabin is 6 ft. 4 in. high yet the boat is by no means as topheavy as she looks. But a minute's time is required to lower the mast should she be rolling too heavily, or to pass bridges.

The tender is a light punt and can be carried on the after deck where it occupies very little space. From the cabin one can look past the galley roof on each side and by standing up (on a footstool if one is short) can look entirely over it. Ice is placed in the refrigerator through the deck and the hatch is further protected against the sun's rays by a loose wooden cover. In one of the stern compartments is a smaller gasoline tank to be drawn on in emergency. Arrangement is provided for easy handling of the bow anchor by a short bowsprit and a spare mast with yards and sail can be used on the after deck when speed under canvas is required.

La Vagante II has many admirers and has never been an object of ridicule despite her unusual appearance. She may not be pleasing to the eye of many an old salt, but whatever she is not, she certainly is original and this fact, coupled with the remarkable convenience of her whole layout, has converted all those who have come to scoff.

# New Motor Boat Designs.

THE accompanying profile and deck plans show a 26-foot runabout designed for Mr. George E. Maltby, of Jamestown, New York, by James Whittlesey Hussey, of Philadelphia, for use on Lake Chautauqua, New York.

The lines and construction have been worked out to give the best speed possible in a gentleman's runabout, without sacrificing stability, comfort, dryness, or ease of handling. The sheer has been hogged to reduce weight at the ends and to give an unobstructed steering view when at top speed.

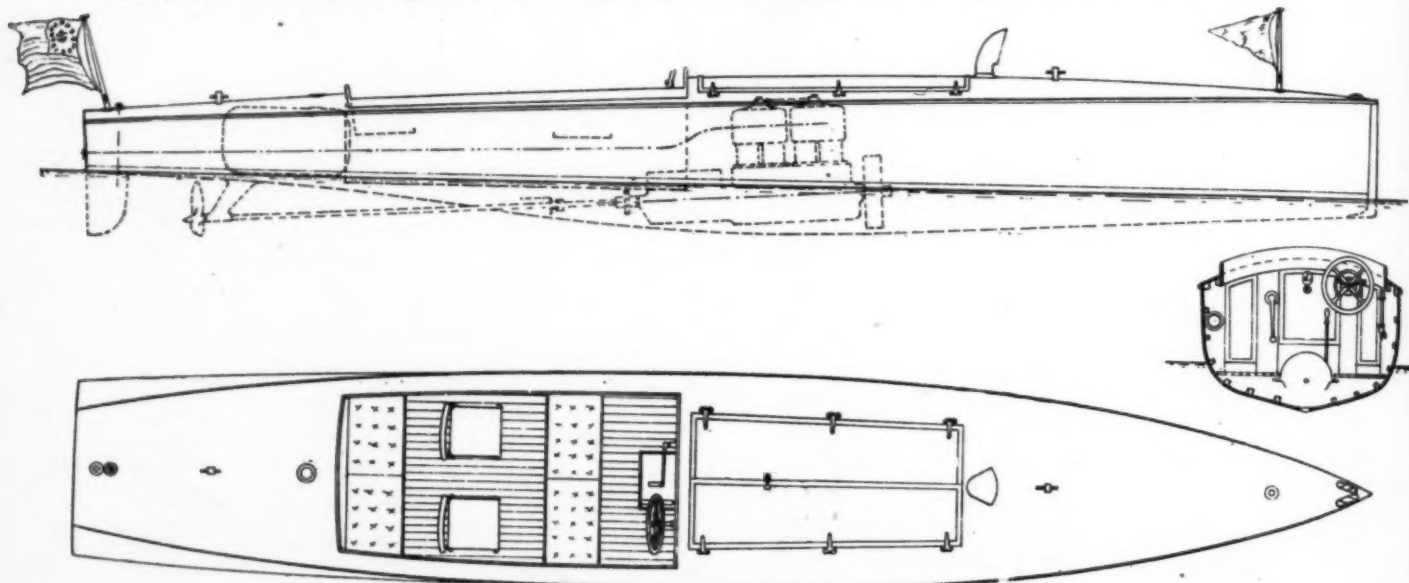
The appearance of the craft will be noteworthy in that she will be planked and decked with mahogany, finished bright, all planking

## A 26-Foot Runabout.

being in full lengths from stem to transom, and all fittings, controls, exposed tanks, etc., will be nickel-plated. The cockpit shows a panel bulkhead and checkered aluminum, auto-type floor forward of the control seat. An in-laid white pine and mahogany floor extends aft to the lazy back seat in the stern. No moving parts show in the cockpit, which seats four on the thwarts and two in wicker arm-chairs of special design. All seats will be upholstered with dark green leather cushions of life preserver type, and full auto controls are to be fitted, together with a rear-starting device.

The construction is on the longitudinal seam strap system, with web frames and light, bent frames to hold the quarter-inch planking in form. This produces a light and at the same time, rigid and water-tight hull. The stability of this design is exceptional, as the engine and fuel weights are carried at a very low point, pressure being used on the gasoline tanks. The deep rudder and low center of gravity will make turning at full speed with an inboard heel possible.

The boat is designed for a six-cylinder,  $4\frac{3}{4}$  x  $5\frac{1}{2}$  inch motor, and will be equipped this season with a Sterling 18-25 h.p. motor. She is expected to be very speedy, even with the small power.



The exceptionally low center of gravity of Mr. Hussey's 26-footer should make her particularly seaworthy and will make possible short turns at high speed.

## A Homer 25-Foot Runabout.

ON the opposite page are shown the plans and interior arrangements of a 25-foot runabout designed in the office of A. P. Homer, 88 Broad Street, Boston, and which is now under construction at the yard of Graves at Marblehead, Mass., for Mr. R. K. Eaton. The boat will be used principally on Lake Sunapee in New Hampshire.

The beam of this craft is 5 feet  $5\frac{1}{2}$  inches and the draft 2 feet. While she is designed primarily for a fast runabout and, owing to her generous beam would undoubtedly be capable of carrying a much higher powered motor, the engine to be installed is a two-cylinder, 12 h.p. Eagle, which will drive her a little better than 12 miles per hour. The cylinders of this motor measure  $4\frac{1}{2}$  by 5 inches and the entire power plant is located in the forward part under a hinged hatch, well protected from the weather.

The motor is controlled and reversed from the helmsman's seat and is started from the same position through the use of the Hilton rear-starting device. The steering wheel is of the automobile type, with spark and throttle controls mounted upon it, and the steering column is placed at a convenient angle, with the tiller cables running aft of the bulkhead, where they are easily accessible.

The gasoline tank is placed under the steerman's seat and measures 8 by 14 by 42 inches. It is constructed of copper and has a capacity of 20 gallons, which will give the boat a considerable cruising radius.

The cockpit is fitted with removable mahogany seats upon the sides between the stern seat and the steerman's seat, so that chairs may be easily substituted if desired. Plenty of locker space is provided under the stern seat, and all the open space in the cockpit is available, since tool lockers and shelves in the compartment forward of the bulkhead provide an abundance of storage room for tools and motor accessories.

The boat is substantially constructed with an oak keel framing and engine beds, yellow pine stringers and clamps and cedar planking. All the decks, sheer strakes, coamings, hatches, seats, cockpit, ceiling, etc., are of mahogany. The deck fittings are of polished brass and all fastenings are made either with copper or brass screws.

The engine is placed upon yellow pine stringers  $\frac{3}{4}$  of an inch thick running the entire length of the boat from the shaft hanger to the bow. Directly underneath the engine bed, extending from the forward cylinder to the rear of the reverse gear, the keel is re-inforced

by three heavy floors of  $1\frac{3}{4}$ -inch white oak. The shaft log is of white oak 5 by  $3\frac{1}{2}$  inches, and the angle at which the motor is placed allows the shaft to be run direct to the propeller without the use of a universal joint.

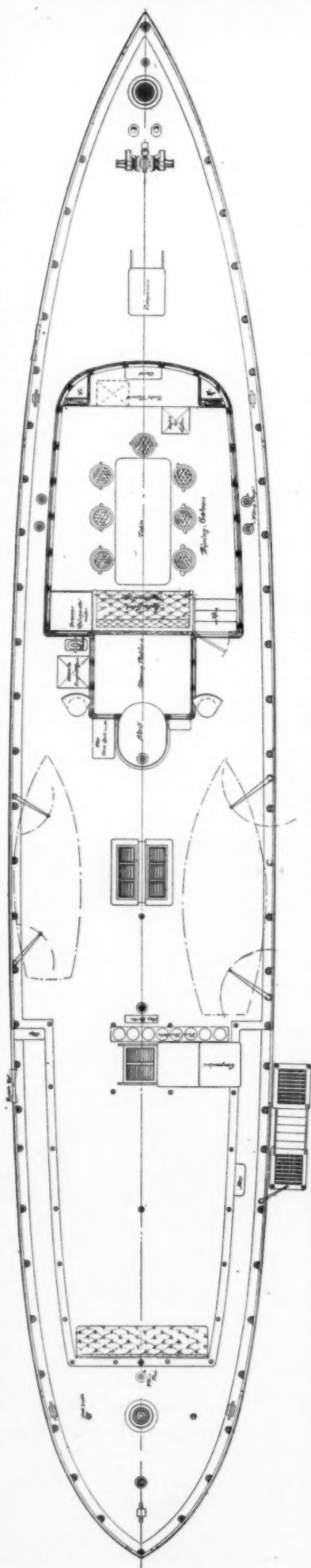
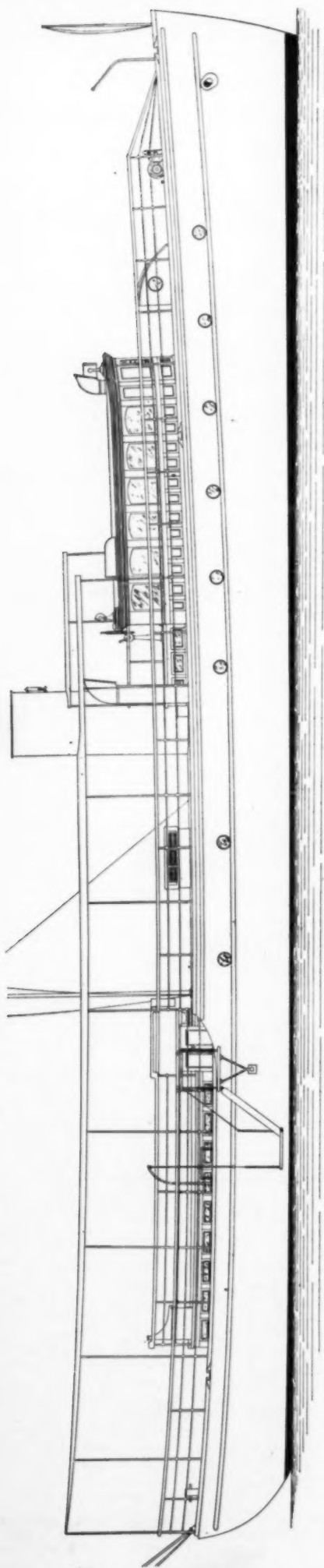
An expansion chamber for the exhaust is placed forward of the bulkhead near the motor and the cooling water is run through this chamber. The exhaust outlet is at the stern on the starboard side. The shaft hanger is supported by brass braces with sharp edges to reduce as much as possible any resistance to the water. Babbitt metal is used in the bearing. A brass shoe measuring  $2\frac{1}{2}$  inches by  $\frac{1}{2}$  inch extends from the base of the rudder post to the dead wood under the shaft log, forming a skeg to protect the propeller. This skeg is designed so that the boat will have as short a turning radius as possible.

A brass stem extends from the deck at the bow to a point well down under the keel, and the stern, which is of  $\frac{3}{4}$ -inch mahogany, is also bound with sheet brass.

The boat is a very handsome and serviceable looking craft and should prove very popular, since she has a comparatively large carrying capacity, and sufficient speed for ordinary running. The boat is to be a stock model and sells complete for \$1,000.







Although Taconite is virtually a flush-deck craft, the central trunk at the stern affords excellent ventilation and furnishes a pleasing variation from the general design of this type.

## Taconite, A Ninety-Six Foot Motor Yacht.

**T**HE rapidly growing fleet of yachts on the Pacific Coast will be increased by the addition of a new craft for Mr. William E. Boeing, of Seattle, Washington. Mr. Boeing is an ardent yachtsman, and his new yacht will be the largest motor boat on the Pacific Coast, and will be used for extensive coastwise as well as deep-sea cruises, the itinerary covering a proposed trip along the coast of Alaska, then across to the coast of Siberia, down the Asiatic coast, stopping at various points of interest en route, and the cruise may include a visit to Manila.

The plans and specifications were furnished by Mr. Henry J. Gielow, of New York, and the yacht is now being constructed in Heath's shipyard at Seattle.

The principal dimensions of the new craft will be as follows: Length over all 96 feet 6 inches, length on load waterline 90 feet, beam extreme 16 feet 6 inches, and draught 5 feet 9 inches. Her lines are fair and easy, running in an unbroken sweep from stem to stern. There are no hollows anywhere; in fact, the model shows power and seagoing qualities throughout. She has a graceful sheer and liberal freeboard, and her appearance indicates clearly the service for which she is intended.

The hull will be constructed of wood, the keel, stem, and stern post being of white oak; the frames will be of Douglas fir, double framed of liberal dimensions, spaced 20 inches between centres; the planking and deck will be of Oregon pine in long

lengths; the plank-sheer, deck houses and all wooden deck structures are to be of teak finished bright. She will have no spars other than a military mast for displaying colors and signals, besides which she has a stack for the more perfect ventilation of the galley and engine room.

The deck will be virtually flush, extending in an unbroken sweep from the stem for a distance of about 63 feet, where it drops 15 inches on each side for a width of 27 inches, leaving a central trunk which extends 21 feet farther aft. This arrangement gives excellent ventilation, and does away with the high and boxy appearance of the stern that is noticeable in some flush deck power boats. Forward there will be a deck house 17 feet in length

and having an average width of 11 feet 3 inches on the inside. This house will be depressed 26 inches below the main deck, and will be constructed and finished in teak panel work on the inside and the outside. Aft of this will be a steering bridge, 6 feet long and 7 feet wide, enclosed with a brass railing. The skylights and deck fittings are of a thoroughly wholesome design and substantial construction.

The deck house will be fitted up as a dining room. With the exception of a large sofa in the after end chairs will be used. Aft on the starboard side there will be three steps leading up to the main deck, and opposite, on the port side, will be a small refrigerator three feet in height. In the forward end of



the deck house there will be a buffet and sideboard, all finished in teak, with drawers and lockers for cutlery, silver, etc. A dumbwaiter will be fitted leading down to the galley below.

There will be five steel bulkheads, dividing the vessel into six watertight compartments. Immediately abaft the collision bulkhead will be the captain's stateroom, fitted with berth, bureau, lavatory and large wardrobe. Aft of this, on the starboard side, for a distance of 13 feet in length, will be the fore-castle, extending 12 inches across the centre line of the vessel, and fitted with berths, lockers, and folding table. Opposite, on the port side, will be the engineer's stateroom, with berth, wardrobe and bureau, and forward of this will be a toilet room, 4 feet in length, fitted with closet, wash basin, and approved open plumbing.

Next comes the galley, 6 feet 6 inches in length and extending the full width of the vessel, fitted with stove, dresser, sink, dish racks and closets. On the port side will be a large refrigerator, having a cold storage space of over 100 cubic feet. The yacht will be equipped with a refrigerating plant,

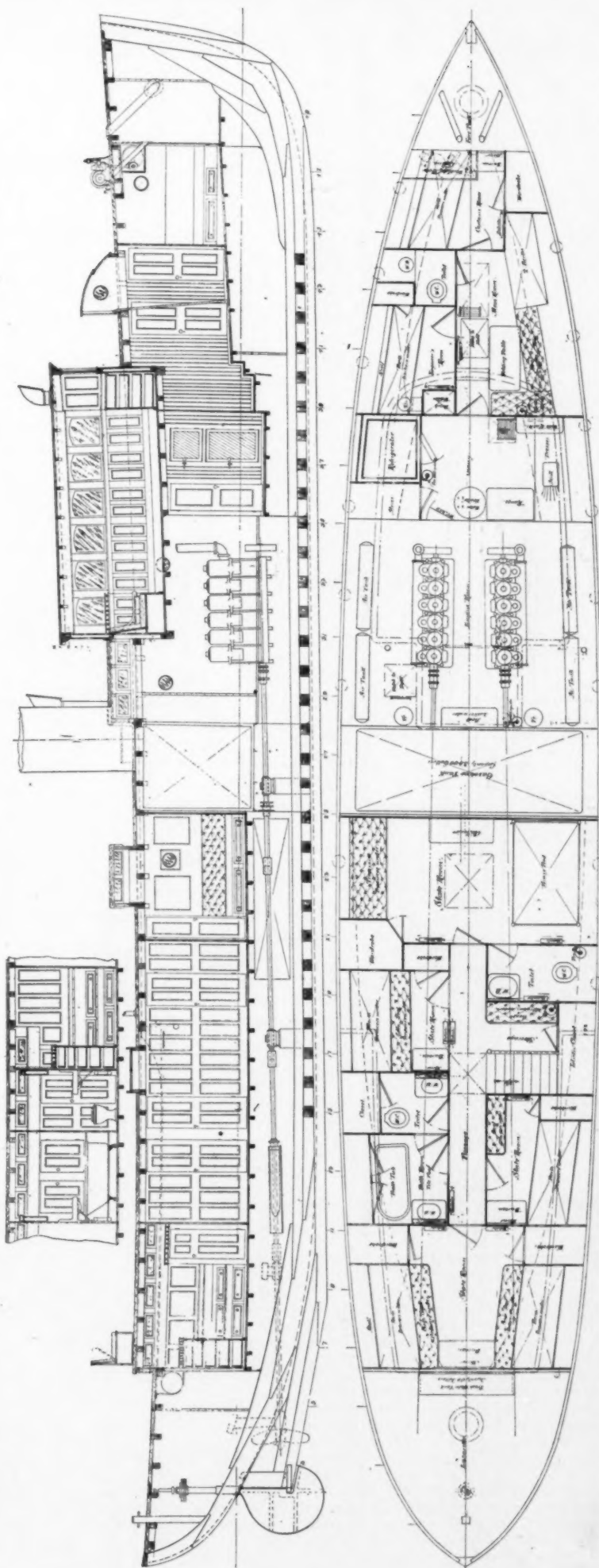
so that the owner will be entirely independent of the ice supply problem.

Immediately aft of the galley will be the engine room, 12 feet 9 inches in length, and extending the full width of the vessel. This space will be enclosed in steel watertight bulkheads, and will contain two main engines for propelling the vessel, a generating set for supplying electricity for the lighting, and for operating the windlass by electricity. This outfit is also equipped and connected with powerful bilge pumps, with suitable connections so that water may be discharged from any compartment at will. In addition to this there will be the refrigerating machinery. There will also be installed a small boiler for supplying hot water for heating the vessel in cold weather. In addition, to the natural ventilation of the engine room will be equipped with a system of forced ventilation operated by electricity, capable of changing the air every three minutes.

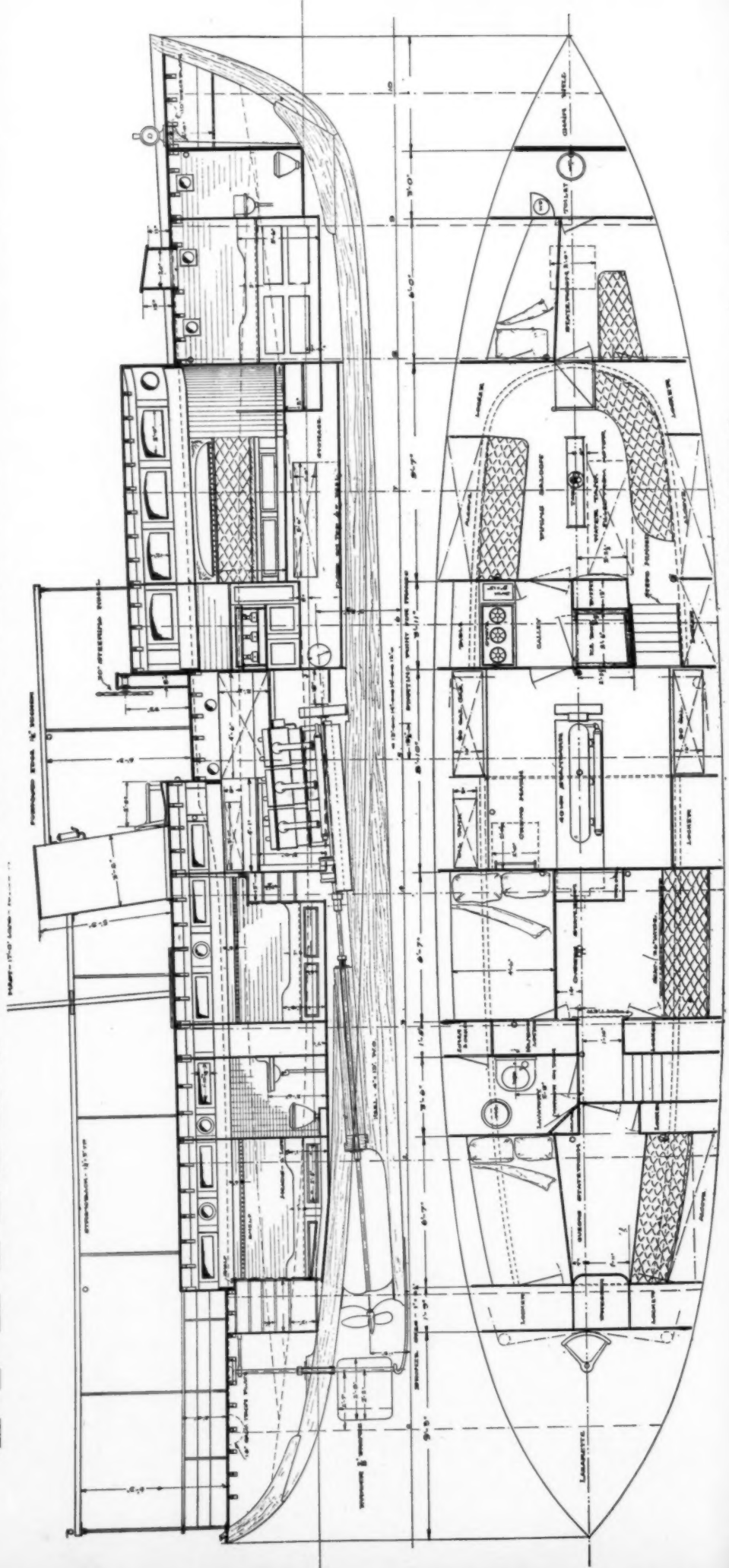
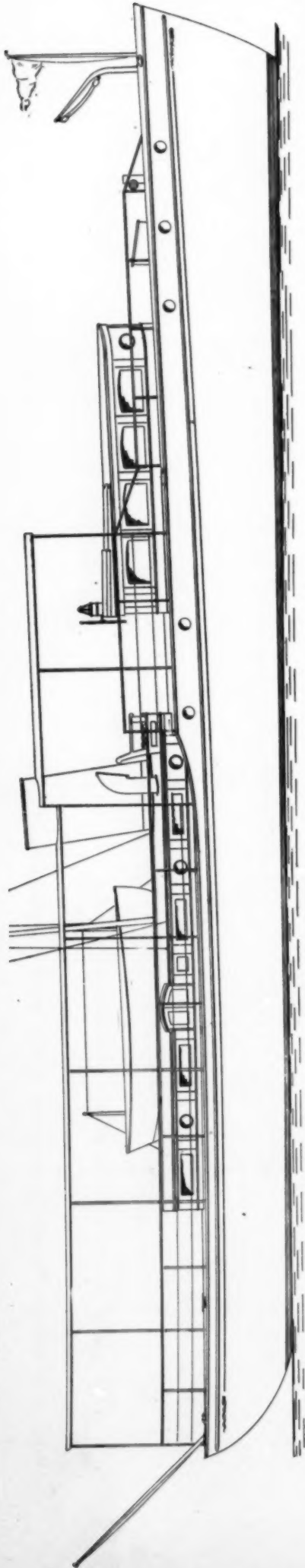
The gasoline tank will be amidships, immediately aft of the engine room, and will be enclosed in a steel watertight compartment. This tank will be constructed of steel, galvanized, with all rivets and

seams soldered. It will have a capacity of 3,400 gallons, which will give the yacht a cruising radius of 2,200 miles at full speed, or 5,500 miles at 10 miles an hour. Next aft of the gasoline tank is a steel watertight bulkhead, immediately aft of which is the owner's stateroom, 8 feet in length and extending the full width of the vessel. On the starboard side will be a double brass bed, on the port side a sofa with drawers under, and forward amidships a mahogany chifferoni. On the port side aft of this stateroom, and connecting with it will be a large wardrobe, and on the starboard side a toilet room, fitted with porcelain basin and closet, and nickel-plated open plumbing complete. Aft of this will be the steerage on the starboard side, and opposite this on the port side a single stateroom, with berth, divan, bureau and wardrobe complete. Aft of this port stateroom will be a toilet room, and abaft of this a bathroom, with porcelain tub, lavatories, closets, and nickel plated open plumbing complete. Opposite this bathroom on port side will be a single stateroom, with wardrobe, divan, bureau, etc. At the after end of the vessel and com-

municating with the steerage by a passage 27 inches in width, will be a double stateroom, 9 feet in length, extending the full width of the vessel, fitted with a large bureau, two single berths, two sofas and two wardrobes, with all furnishings and fixtures complete. Although the main fresh water tanks will be under the cabin floor, auxiliary water tanks will be provided to supply running water throughout the vessel. The bathroom will be tiled, as will also the other toilet and dressing rooms. The motive power of this yacht will consist of two 6 cylinder "Standard" engines developing not less than 100 horsepower each, which will give the yacht a speed of over 16 miles per hour. This, combined with the large gasoline supply, refrigerating plant, and large fresh water capacity will give this vessel the distinction of having the largest cruising radius and best speed yet produced in a motor yacht of these dimensions. She will be equipped with three boats, an electric light plant and windlass operated by electricity, hot water heating system, running water, telephones, etc., so that she will be a most complete and up-to-date craft in all respects.



In interior construction, Taconite is exceptionally roomy. Notice the unusual size of the gasoline compartment which will give her the largest cruising radius of any craft of her size.



Two Matthews 66-footers for the Great Lakes. See opposite page for description of these craft.



## Two 66-Footers for the Lakes.

TWO 66-foot cruisers, shown on the preceding page, are being built by the Matthews Boat Co., of Port Clinton, Ohio, for delivery June 15 and July 1, the first being for Mr. M. B. Grover, of Cleveland, and the second for Harry W. Kanouse, of Detroit. With the exception of a bath, which will be placed in the toilet room of Mr. Kanouse's boat, as shown upon this page, the two designs are precisely alike. The boats have a beam of 13 feet and a draft of 4 feet and are equipped with 40 h.p. six-cylinder motors.

The general construction provides for a keel of the regular Matthews type, with copper keelsons riveted thereto and frame measuring  $2\frac{1}{4}$  by 2 inches, spaced 12 inches at the centers. The stringers are of liberal dimensions, of long leaf yellow pine, not less than 35 feet in length, with a hogging clamp notching into the upper bilge stringer. The hull guard is of white oak, extending about 3 feet from the side of the hull and capped with a  $1\frac{1}{4}$ -inch oval galvanized iron bang strip. The hull mouldings are of mahogany, the covering board of white oak, and the decking of yacht laid cork white pine, blind fastened to the deck beams and strakes.

The lower thickness of the deck is of cypress with painted canvas between, and the exterior of the deck houses is of mahogany.

The deck on the forward house is also built of mahogany, and the house has three panels forward fitted with 7-inch hinging port lights and four windows on each side, fitted with bevel plate glass.

The forward deck house is fitted to be used as a dining saloon and is equipped with a special table. A buffet and galley are located at the after end of this house. Steps lead from here to a forward stateroom, fitted with a single berth and a sofa seat, with a lavatory compartment forward.

The bridge deck is located amidships, from which point the boat may be handled by one man, as the reverse and motor controls are brought up to a special bronze stand by the side of the steering wheel. The wheel is of

the Edson type, of mahogany and bronze, mounted on a binnacle stand with a dome binnacle and compass mounted upon it. A slat type of seat extends the full width of the bridge and provides a comfortable space for six or eight people, just forward of the stack.

The motor room is placed immediately under the bridge and is ventilated by windows and port lights. Two gasoline tanks, each of 90 gallons' capacity, are placed one on either side of the engine room and an oil tank is located upon the port side. The forward bulkhead is of steel and is built water-tight, with steel angles about the sides, and stiffening webs every 18 inches. A bulkhead at the after end of this compartment is also steel, but is not water-tight. A pipe ladder extends through a hatch from the motor room to the port side of the vessel.

The after cabin is given over entirely to the owner's use and is arranged with two

At the after end of the cabin is the guest's stateroom fitted with a double berth on the starboard side and a sofa berth opposite, a dresser and hanging lockers. A locker at the forward end opens into a space under the companionway steps, making a large closet. This room is furnished in cream enamel with mahogany trim and the upholstery is in brown silk velour.

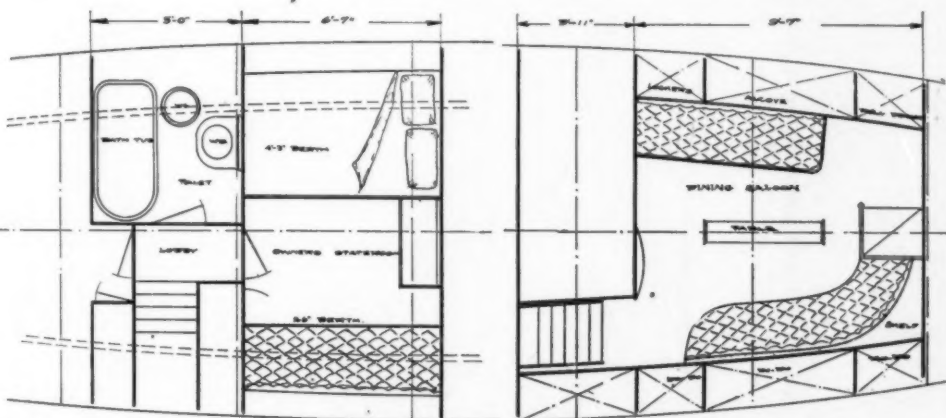
The entire vessel as shown, is covered by awnings, the bridge awning being fitted with side curtains so that it can be entirely enclosed. Celluloid windows are provided for the bridge deck so that the entire deck may be closed to protect the helmsman. The stack is fitted with a mechanical blower for ventilation to the motor room and the decks are protected by railings of galvanized iron stanchions capped with a mahogany rail.

On each boat is a mahogany power tender slung upon davits. The tender is made with a lap strake cedar hull, mahogany washboards, seat risings, thwarts and slat floors.

An independent electric lighting plant, consisting of a two-cylinder motor direct connected to a generator, provides an efficient means of illumination throughout the whole boat. Upon the same base with this motor are connected air pumps and specially built power bilge pumps.

The fixtures are made especially in verde green finish and a small storage battery equipment is utilized in connection with the lighting system for occasions when the main plant is not operated. Under ordinary circumstances, however, the lights will receive their current direct from the generator, operating at 110 volts. The electric plant is installed in the motor room.

The design of these boats presents a very snappy and attractive appearance and with all the details so carefully worked out, they should prove very satisfactory to their owners. They will be used upon the Great Lakes for the present season and one of them will doubtless go south during the coming winter.



The only difference in design of the two Matthews boats is in the arrangement of the bathrooms.

large staterooms, the owner's stateroom being fitted with a berth 4 feet 4 inches in width with a sofa berth on the opposite side of the room. Hanging lockers are provided and a dresser is located at the forward end. The finish of this room is cream enamel with mahogany doors, furniture and trim, and green upholstery and carpets. The starboard side gives access to the deck by a companionway and is constructed with a lobby at the base with doors opening into the lavatory and owner's and guest's stateroom.

Immediately opposite the companionway is the bath room, fitted, in addition to the other features, with a medicine chest, linen lockers, etc. The floor is of tile and the room is furnished in cream enamel.

## A 135-Ft. Cruising Motor Yacht.

ON the following page are shown the profile, deck plans and interior arrangement of a 135-foot vessel which has recently been designed by Whittelsey & Whittelsey of New York City, for a New York yachtsman. This boat has a beam of 18 feet and will probably be one of the handsomest of her length, since the low freeboard desired has given her designers ample opportunity to produce long, graceful lines with low deck erections.

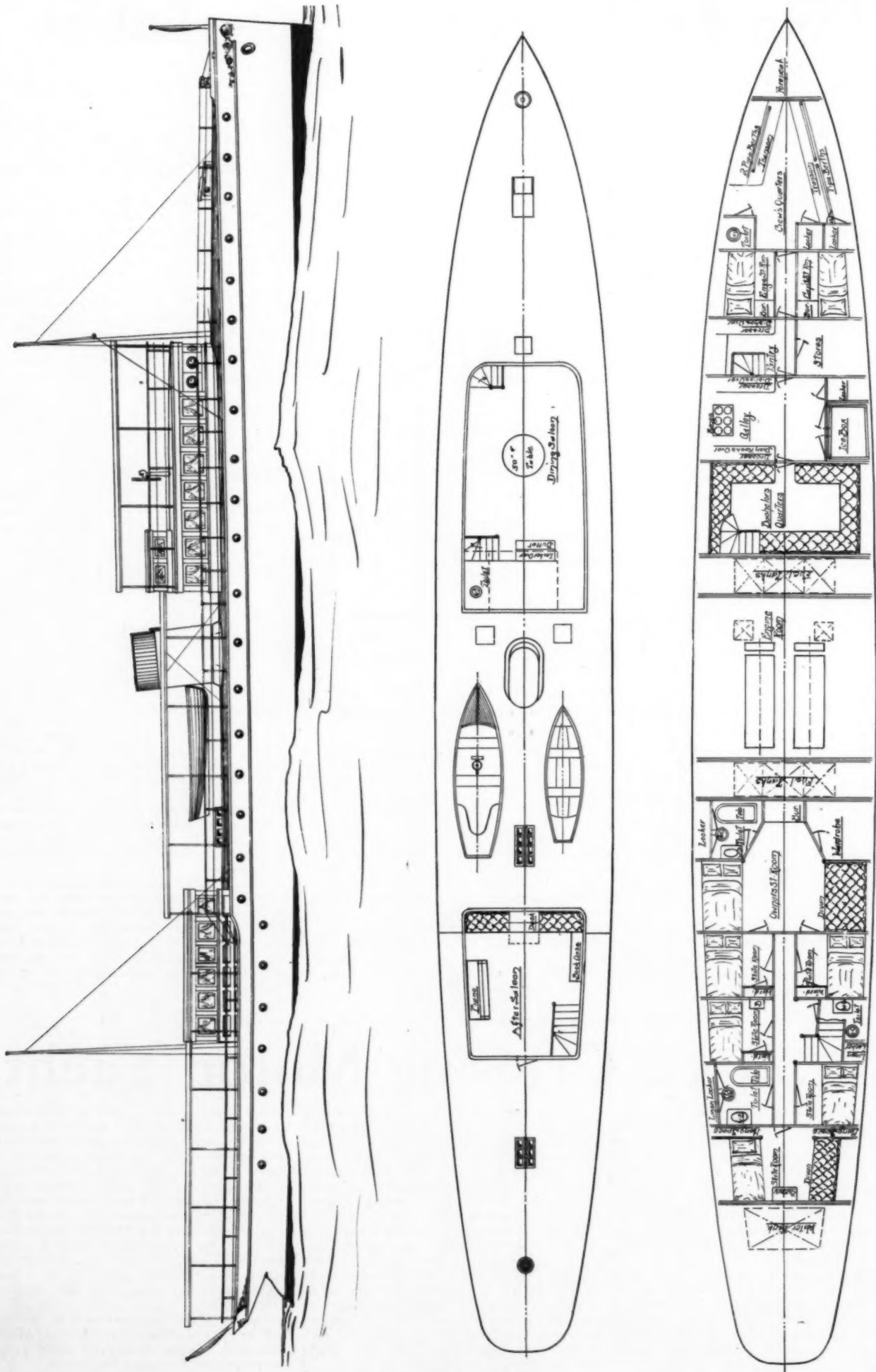
A keen appearance of the entire design was desired by the owner, who wished to use every foot of deck space possible. It will be noticed that the forward and after deck are left free, and wide passageways on both sides of the deck houses permit the entire length to be available.

The arrangements show a very large dining saloon that will seat 14 people with the table extended. Sunken into the after end of the dining saloon is the chart house and a stairway at the forward end leads down into the pantry. The stairway at the after end gives entrance to the bachelor quarters, a large rectangular lounging room.

Below deck, the design shows a large galley and store room with the captain's and engineer's room and crew's quarters in the forward part of the vessel. The fuel tanks are placed both forward and aft of the engine room and the power equipment consists of two 150 horsepower motors. Each of the fuel compartments contains three tanks and each compartment is partitioned off by a water-tight bulkhead.

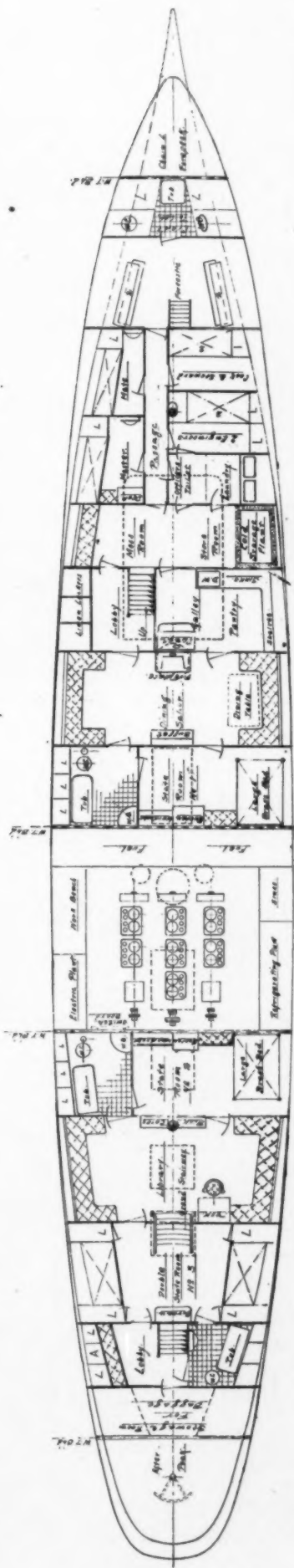
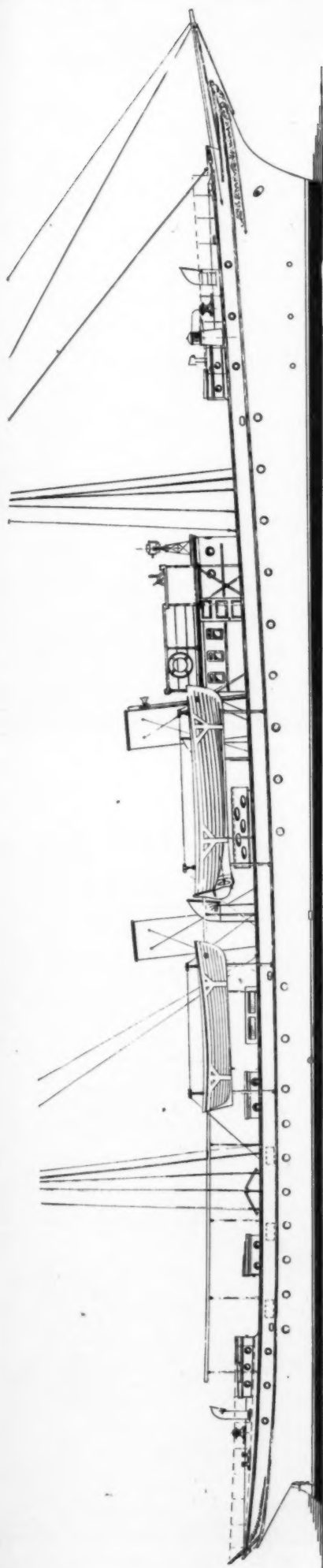
The saloon shown on the after deck affords very comfortable quarters and gives a cover to the companionway extending to the owner's and guests' quarters in the after part of the vessel. These quarters contain a very large double stateroom with private bath and wardrobe for the owner, a special large stateroom aft and four other staterooms between these two, all containing double berths, bureaus, etc. Each stateroom is equipped with a folding wash basin, and, in addition to the large bath room upon the port side, there is a large toilet room for guests upon the starboard side.

The entire hull construction is of steel and all exterior deck work is of solid African mahogany. Below decks the furnishings are in white and mahogany throughout.



The twin-screw 135-footer designed by Whittelsey & Whittelsey, a description of which appears upon the preceding page. The deck arrangement has been designed to leave every available foot of space free, and the long graceful lines of the hull, combined with a low freeboard give a very pleasing appearance.





The outboard appearance resembles one of the early Scotch steamers with a clipper bow and stern and a large sail spread.

# A 151-Foot Triple Screw Motor Yacht.

**S**OMEWHAT of a departure from the standard type of motor yacht is shown upon the plans of a steel vessel designed by J. Murray Watts, of Philadelphia, and which will be built next fall at one of the shipyards on the Delaware for a Western yachtsman. In order that she may be able to go to sea for long voyages, she is given, in addition to the large sail spread, a motor equipment divided into three units, the central of which is a six-cylinder, 150 h.p. engine, coupled directly to the shaft. The two wing motors each have four cylinders and develop 100 h.p. each. Contrary to the usual practice these motors are located aft of the center of buoyancy while the fuel is carried forward. This permits

shorter shafting to be used and at the same time the amount of fuel carried will not affect the longitudinal trim of the boat.

The after stack ventilates the engine room and takes the place of the forced ventilating systems from the forward stack ventilator. The forward stack ventilates the after part of the boat. The forward stack ventilates the owner's quarters forward and also takes the smoke pipes of the galley and the fireplace in the dining saloon. The bridge above the chart house forward extends out to the sides of the vessel and is supported on steel stanchions and equipped with the usual steering devices and engine room telegraph.

small amount of people and each stateroom is provided with its own bath room and dressing room connecting. The turtle-back decks at the end give especially good headroom where most needed.

The owner's quarters, which are arranged about amidships, consist of a very large stateroom with connecting dressing room and bath. Forward of this is a dining saloon with soft leather divans at the sides and an open fireplace on the center line. Forward of this is a lobby and a stairway leading to the chart house, which is also used as a breakfast room. Below the chart house is a large galley, pantry and storeroom and forward of this is the crew's mess room.

The crew's quarters are exceptionally roomy and throughout the whole boat is a very large amount of storage room for spare tanks, supplies, etc. There are four water-tight steel bulkheads, and piping for vacuum cleaners is installed in the living quarters.

The dimensions of this vessel are 151 feet over all, 134 feet 4 inches between perpendiculars, 24 feet beam, 9 feet 6 inches depth. The deck houses are finished in plain white outside and the interior joiner work of the chart house and dining saloon is teak. The library is in mahogany and the stairways are white with bright chintz panels. The preliminary estimates on this yacht vary between \$61,000 and \$63,000, exclusive of the furnishings.



Falcoma's large main saloon is one of her chief attractions. Note the little folding organ in the foreground.

## Falcoma—A Canadian Cruiser.

A Sixty-Three Footer Designed and Constructed in British Columbia, For Cruising Along Coast.  
The Many Unique and Original Features That Make Her an Interesting Boat.

**A**MONG the latest additions to British Columbia's fast growing fleet of power yachts, one of the most interesting is Falcoma, a smart looking schooner-rigged craft recently completed for Mr. Frank de Grey, of New Westminster. She is what might be called a heavy duty, long distance cruiser and her design and specifications were prepared by E. Trist, naval architect of Vancouver, who incorporated in her, to a great extent, the ideas of her owner, a pioneer in the motor boat field and the owner of several boats. She was built by Easthope Brothers at their yard at Vancouver and her equipment includes everything that is needed in a seaworthy boat whose field of operation is along the coast of British Columbia.

Falcoma is approximately 63 feet over all and 58 feet on the water line, with a moulded beam of 12 feet and draft of 5 feet, and a glance at the photograph on the opposite page will show that in a number of respects she is different from the usual practice. She has the much favored and justly popular raised deck forward, with a small trunk just forward of the bridge deck, giving ample protection to the steersman's position. This trunk cabin, or pilot house at we may call it, is fitted with duplicate steering and control mechanisms, making an ideal place from which to control the boat in stormy weather.

A cabin trunk extends aft from the bridge deck, its roof being on a level with the raised deck. The after deck is flush and is continuous with the bridge deck, with which it is joined by the narrow runways on either side

of the cabin trunk.

The space beneath the raised deck is devoted to the forecabin, with sleeping accommodation for four men, the backs of the seats which are used as berths swinging up to form

### Dimensions, etc.

Length over all .....	63 ft.
Length on the water line.....	58 ft.
Beam, moulded .....	12 ft.
Draft .....	5 ft.
Motor.....	3 cyl., 4 cycle, 40 h. p. Cowie.
Owner.....	Frank de Grey.
Designer .....	E. Trist.
Builders.....	Easthope Brothers.

two more berths. As shown in the illustration opposite, the motor is installed just aft of the forecabin in the space beneath the pilot house, making the problem of control an easy one.

The engine is a three-cylinder, four-cycle, 46-horsepower Cowie of the piston valve type built by the Schaake Machine Works, of New Westminster and Seattle. It is equipped with a Cowie retort and separator, which uses a very low grade of oil successfully and without any smell or change of carburetors. This retort and separator is an innovation and a decided saving in the cost of fuel is claimed for it. The engine is mechanically lubricated,

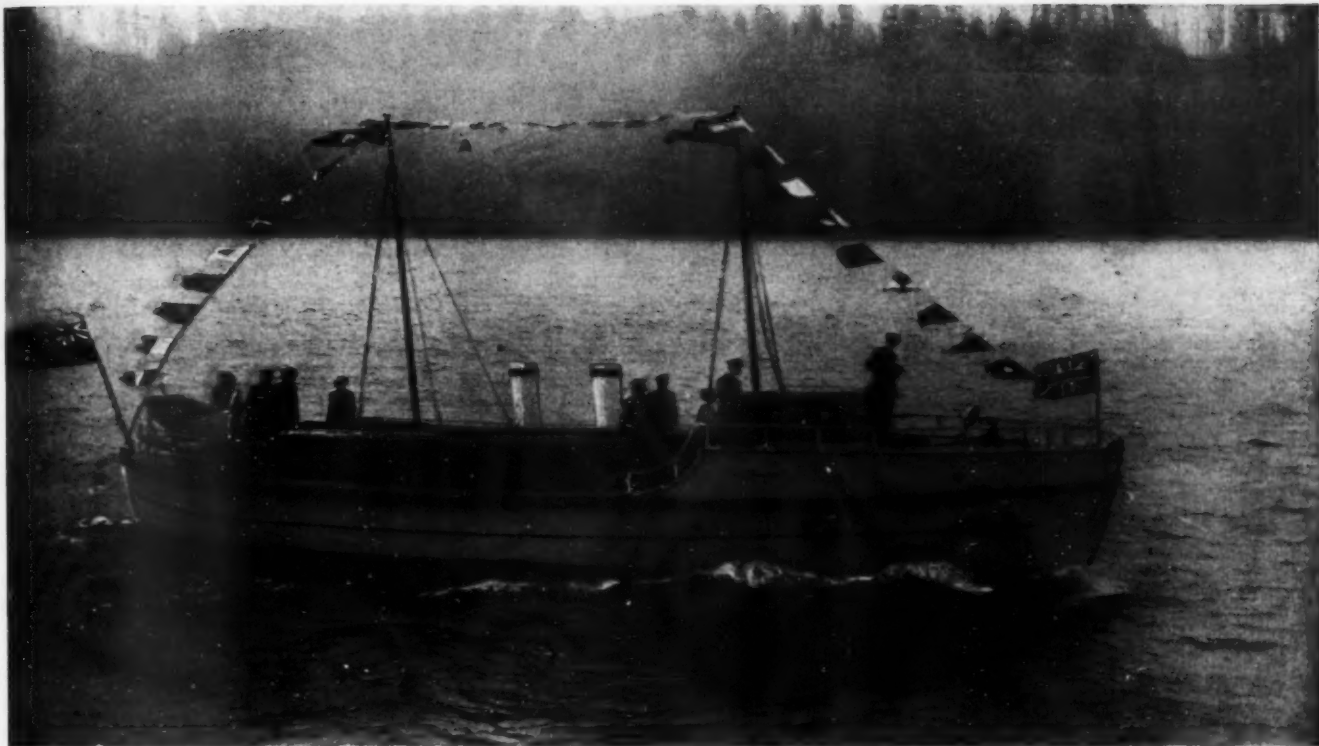
with gas engine oil for the cylinders and castor oil for all other parts and bearings. The power installation is interesting throughout and was selected after considerable investigation by Mr. de Grey in this country and in Europe.

From the foregoing it is seen that the crew's quarters and engine room are forward, entirely separated from the rest of the boat, leaving the after part beneath the trunk entirely available for the living quarters. With the exception of the space occupied by the galley and the toilet room, the entire length of this cabin is thrown into one large saloon, the interesting arrangement of which is clearly shown in the illustration. The divans along either side make up into two berths apiece, so that four persons may sleep here comfortably.

The most interesting feature of this compartment is the table, a sort of sarcophagus, which conceals, not the family "skeleton," but—a full sized bath tub. Besides being an extremely useful feature in its usual capacity, it opens to the imaginative mind great possibilities for entertainments of the Annette Kellermann variety. We would also heartily recommend such an installation to the motor boatman who happens to be a Baptist minister.

This large saloon is a feature that should appeal to the deluded motor boat owner who, with a view of obtaining "exceptional accommodation for so small a boat," allowed himself to order a boat whose interior was cut up into a number of little cubbyholes, which proved much less roomy than they had appeared on paper. At night sufficient privacy





Intended for outside cruising along the British Columbia coast, Falcoma was designed on whaleboat lines, with ample draft and freeboard.

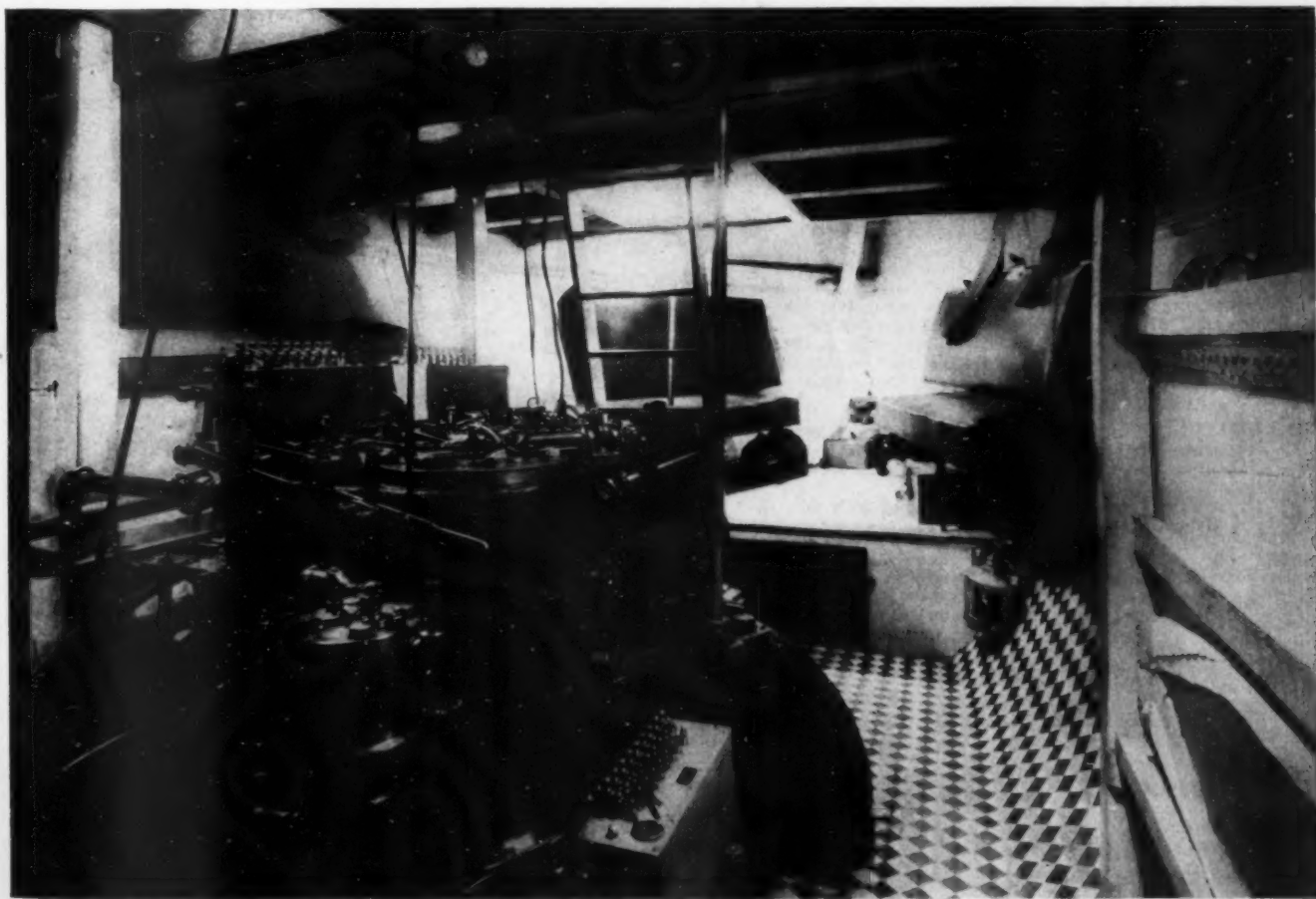
may be obtained by subdividing the space by means of curtains, and in the daytime it forms a large, light, airy living room.

For the personal use of the owner there is a small stateroom aft, which extends beneath the after deck. In this room there is a double berth in the form of a divan, and a couch. The walls are draped with Japanese silk and on the floor is an axminster rug made to fit the shape of the room. There are two berths

in the pilot house also, so that when necessary the boat will sleep twelve persons.

The boat is schooner rigged with two small stacks amidships, which are rather a harsh note in the design. We believe a more pleasing effect would be obtained by using one somewhat larger stack instead of the two small ones. The tender could be carried on the roof of the trunk cabin just abaft the stack and would not only lend to the general

appearance, but would not take up any available space, as it does in its present position. On the whole, however, the boat is open to but few criticisms. Her model is along the whale boat lines, with good draft and freeboard, ensuring seaworthiness, and this fact, with her two steering equipments and comfortable interior make her an ideal boat for cruising along the British Columbia coast, where the weather is sometimes cold and foggy.



Falcoma's engine room and forecabin. The motor is installed beneath the pilot house where the headroom is limited.

# Screens for the Side Lights.

A Number of Easily Constructed Devices, that, Fit the Peculiar Needs of the Motor Boat.  
Seven Stationary, Removable and Collapsible Boxes that fit Every Set of Conditions.

THE PRIZE CONTEST—Answers to the First Question in the March Issue.

## Collapsible Screens.

*The Prize Winning Answer.*

ON small cruisers the side-lights are usually placed on the raised deck or upon the roof of the cabin trunk. This is a suitable place, for it is high and dry, but the cabin top of a trunk or raised deck cruiser is a choice lounging spot, and fixed side-light screens sadly interfere with this use, and are generally in the way, so the screens should be removable, or, better still, collapsible.

A simple and easy way of making them so is shown in the sketches. Fig. 1 is a plan view of the device folded down upon the deck, and Fig. 2 is a rear elevation of the device raised into position for use. The fore-and-aft board, 10, of the length required by law, is hinged directly to the deck as shown at 11. The lamp bracket 12 projects slightly from the surface of this board, and so that it may not be crushed small wooden buttons 13 are fastened to the same side of the board as the bracket, and these serve to hold the unhinged edge of the board 10 slightly above the surface of the deck.

The transverse board 20, which forms the rear of the screen, is hinged directly to the deck as at 21, directly aft of the board 10, and with the butts or hinges at right-angles to those for the other board. At 22 a For's catch is inserted in the edge of the transverse board 20; 23 is the socket for this catch on the face of the board 10.

These parts are not in the way when folded down upon the deck. They should be so fitted that it requires a little pressure to raise the board 10 into its vertical position. Then the board 20 may be swung up and forced in front of the board 10 until the catch 22 engages its socket. The parts are shown in this position in Fig. 2 with a lantern in place.

J. R. MILLWARD, Newark, N. J.

## Well Worked Out Design.

TO be built of 1/2-inch mahogany or white pine. When open will completely screen the light from abaft the beam and from crossing bow by screen at forward end.

The drawing is made for the starboard box, and the port box, of course, will be opposite to the arrangement shown. The inside of the box to be painted red or green.

The outside, if of mahogany, to be finished in spar varnish; if of pine, painted to correspond with color of top of trunk.

The box to be located parallel to centre line and far enough inboard to keep lantern from striking against wharf or another boat.

It should be set level both fore-and-aft and athwartship, being supported on chocks. A fore and aft piece to be fitted between the chocks and secured to chocks and bottom of box to prevent chocks rolling.

The box is designed for boat 30 feet in length or class No. 2 of U. S. rules.

A. B. CASSIDY, Wollaston, Mass.

## Easily Removable.

THE outfit consists of four deck-plates, four standards, and, of course, the two screens.

The deck-plates should be made of brass, about 1/2 inch high, 3/4 inch diameter at top, with a projecting wing or flange at the bottom extending all round, through which the plates are fastened to the deck with screws. The bottom of these plates must be angled to meet the sheer and crown of the deck, so that the standards will stand perfectly upright.

The standards are made of 1/2-inch round bar iron, the forward standard being a little shorter to allow for the sheer of the deck. The height is governed entirely by the desired height one wishes to have the screens above the deck. The drawing shows 14 inches at the top, the standards have a flat surface, about 5 inches long and indented in about 1/4-inch to form a seat for the screen to rest on. The bottom is threaded to screw into the deck plates.

The screen as shown on drawing is 18 inches long, 6 inches high and has a right angle bend to form the after end of the screen. It is made of 1/16 galvanized sheet iron, with four straps fastened on the back to allow for the standards to slip through. On the front side the bracket is riveted on to hold the lamps; a lanyard attached to the ring in the top of the lamp is run through a screw eye, which is at the bottom of the after

# THE PRIZE CONTEST IN QUESTIONS AND ANSWERS

SINCE its beginning nearly two years ago, the contest department has been conducted with the object always in view of being of the greatest practical value to the readers of the magazine at large. As a contest it furnishes good sport and excellent practice for the contributors, some of whom have become proficient writers in the motor boating field, but the idea of keeping it a practical department has always been paramount. That this has been accomplished is due, in large part, to those readers of the magazine who have contributed to it; some with a regularity which we heartily commend.

THE answers have always been a source of pride and never have we been at a loss for good ones, and enough of them thoroughly to cover the subject at hand. But with the questions it has been different. The importance of good subjects seems to have been lost sight of in the endeavor to answer those already submitted. There have been a good many sent in, but most of them have fallen short in one respect or another.

IN the first place a question, to be eligible, should be of general interest, and in the second place, it should admit of some discussion. A question that fits the peculiar need of some one individual or even community or one that demands an answer that is either right or wrong, without ground for discussion, is obviously unsuitable for this department, but will gladly be answered elsewhere.

THE QUESTIONS FOR THE JULY CONTEST ARE THESE:

1.—Give instructions and drawings, if necessary, for installing a motor in a "Bank" dory, considering also the tank and steering gear installation.

*Suggested by Allan O. Goad, Portland, Me.*

2.—Describe with drawings, if necessary, davits that may be taken down and stowed when the tender is in her chocks.

*Suggested by F. M. Comee, Cambridge, Mass.*

3.—How can one best determine faulty carbureter adjustment and what is the best method of securing perfect adjustment of the average automatic carbureter?

*Suggested by John A. Powelson, Baltimore, Md.*

ANSWERS to these questions, addressed to the Editor of MOTOR BOATING, 381 Fourth Ave., New York, must be:

(a) In our hands on or before May 25, (b) not over 500 words long, (c) written on one side of the paper only, (d) accompanied by the senders' names and addresses. (The name will be withheld and initials or a pseudonym used if this is desired). Questions for the next contest should reach us on or before the 25th of May.

THE PRIZES ARE:

For each of the best answers to the questions above, any article advertised in MOTOR BOATING, of which the advertised price does not exceed \$25, or a credit of \$25 on any article advertised in MOTOR BOATING, which sells for more than that amount.

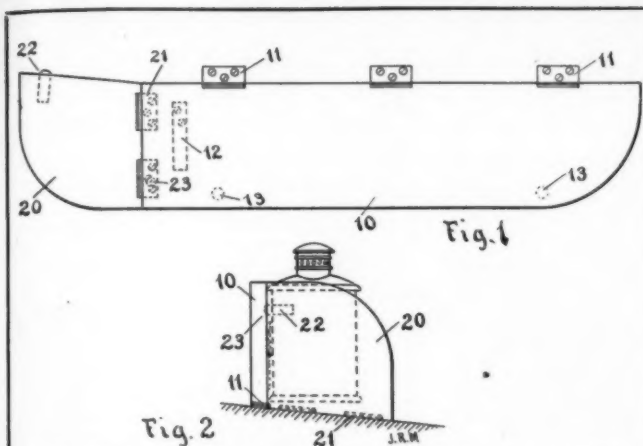
(There are three prizes, one for each question, and a contestant need send in an answer to but one, if he does not care to answer all.)

For each of the questions selected for use in the next contest, any article advertised in MOTOR BOATING, of which the advertised price does not exceed \$5, or a credit of \$5 on any article advertised in MOTOR BOATING, which sells for more than that amount.

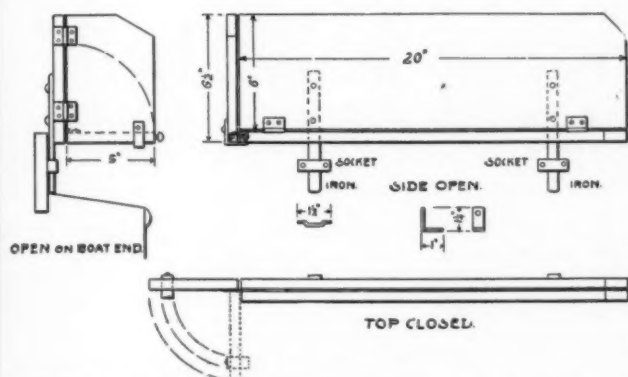
For all non prize-winning answers published we will pay space rates.

When you send in your answer, state what you will take if you win the prize.

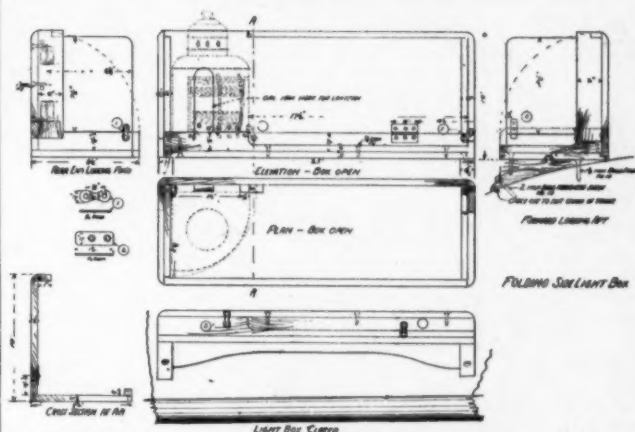




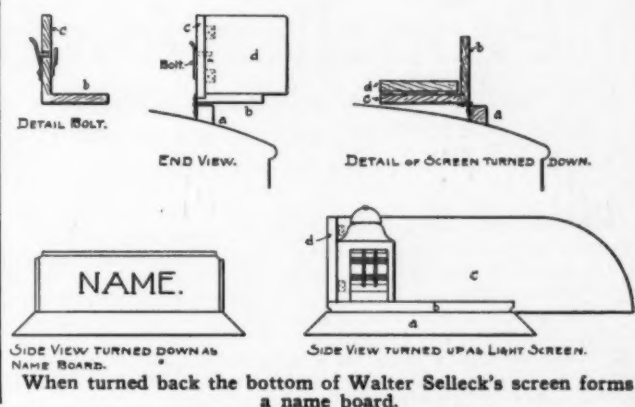
J. R. Millward's screen is simple and occupies practically no space when collapsed.



The box designed by Blake Stevenson may be removed and stowed in a locker.



If properly constructed, A. B. Cassidy's screen would be ideal one.



When turned back the bottom of Walter Selleck's screen forms a name board.

standard and fastened. This eliminates all possible chance of the lamp or screen being unshipped when out in a heavy sea.

In the daytime when the screens are of no use they can be unshipped and the standards unscrewed and stowed away. This leaves the forward deck clear for any purpose which may be required.

E. D. ALLEN, Detroit, Mich.

## Metal Screens.

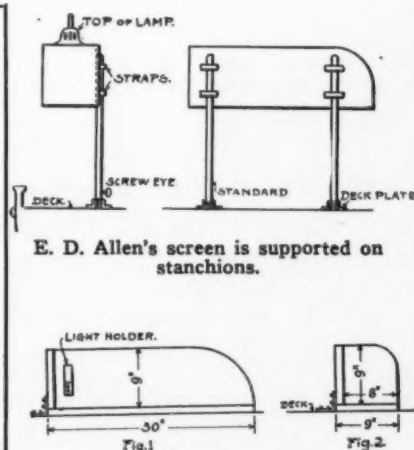
**S**IDE-LIGHT screens may be made from eighteen gauge galvanized sheet iron, or wood. The accompanying detail is for galvanized iron. No dimensions are given as the size is best determined from the lights used. Make right and left-hand brackets for starboard and port.

Cut the bottom and sides as shown. Rivet the hinges on the outside if they are far enough apart to allow the two pieces of metal to go between. Stand up the sides and rivet a small hinge hasp and staple on the joint to hold it up. Fasten a short piece of chain to a cotter pin and fasten the chain to the screen, for a catch. Make the lamp bracket of heavier material, and rivet it in place to suit light. Use tinner's rivets.

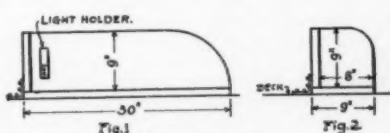
The best method of fastening screen to deck is to drill two holes, as shown, through the bottom, a size larger than the head of a number twelve round-head screw, and cut two slots three times the length. That will let the screws slide back.

At the center of this slot punch up a high spot to prevent slipping off. Place screen in position on the roof, or deck, and screw in the screws until they are lower than the high spot. Now push the screen forward past the high spots and you have the screen secured. A screen made in this way is light and can be easily removed and placed in a locker, and just as easily replaced, or it may be unhooked, and left lying flat on the roof.

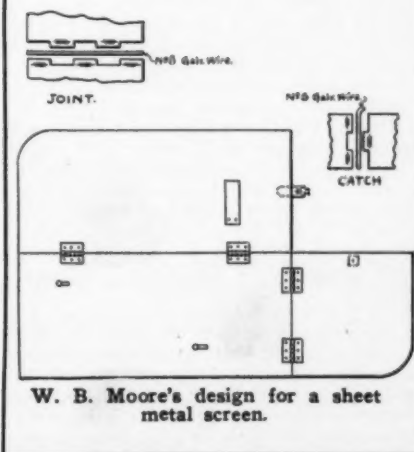
At the top is shown an optional hinge joint



E. D. Allen's screen is supported on stanchions.



The stationary box described by C. Exton Dwyer.



W. B. Moore's design for a sheet metal screen.

for the sides, made by cutting out as shown, and bending around a piece of number six wire. Allow about a half-inch of metal for the joint. Bend one side around first, leaving it loose. Then place the other side under wire, and bend both down tight, using a hammer and a spike for a punch to close in the ends.

A catch made the same way is shown at the right. If you make this catch, do so before riveting on the hinges, thus being sure of a good joint. Do not hammer down as tightly as the hinge, and turn over about a half-inch for a handle. The edges should be bent to the outside.

W. B. MOORES, Newburgh, N. Y.

## Folding Screens.

**I**N the drawing is shown what can be done in the way of a folding screen to be stored away in some locker when not needed.

When folded each one is about 25 inches long, 9 inches wide, and 1½ inches thick; when open you have a good-sized screen (20 x 6 x 5). The two long boards of each screen are hinged together so when they are opened the bottom one is a half-inch under the other (see plan). The end boards are hinged so they will swing to the aft end of the larger ones. All irons and hinges are riveted to the boards, making it stronger than screws. The iron is wagon tire, half-inch wide, cut in the following lengths: Four, 6 inches long, for holding screens in place; four, 2 inches long for sockets, which are perhaps the hardest part of the screen to make, but can be brought to the exact size; two, 2½ inches long, made in an L shape, for holding the lower board in place when open. All lumber to be ½-inch in thickness and in one width. Give the screens three good coats of paint and the iron a couple of coats of black enamel.

BLAKE STEVENSON, New York City.

## Name Board and Screen.

A GOOD, practical, folding screen for side-lights on cruisers, especially raised deck, can easily be made as follows: Fasten a piece of wood (a) to deck to stand plumb, to this hinge (b) to bottom of screen, with (c) firmly fastened to (b) as per drawing. (d) is hinged to (c) to fold on to (c) when screen is turned back for name board.

I have given no measurements as they can be suited to size of lights, etc., care being taken to make them completely screen the light from aft, and across the beam, as per government regulations. If there is much crown to deck (b) can be made narrow so as not to show a wide, unsightly name board.

A very quick and secure way of fastening light to screen is by spring bolt from back of (c) through wood and bracket of light (see drawing), dispensing with rope on lights, tying knots, etc.

To make bolt get a piece of strong spring brass about  $\frac{1}{2}$  inch wide and 3 inches long and rivet in a piece of  $\frac{1}{4}$  inch diameter brass rod, the required length.

Hooks and eyes or small bolts may be used to fasten screen back or to hold it in position for light.

Most any wood is suitable, providing batens, or, best of all, dowels are used to prevent warping of wood. If iron dowels are used be sure to cover ends with wood plugs to prevent iron rust spoiling the finish.

WALTER SELLECK, Stamford, Conn.

## Stationary Boxes.

TO make the stationary side-light screens shown in the drawings, any wood may be used and should be about one inch thick.

Saw four pieces, 30 inches by 9 inches, and cut one end of each into shape shown in

Fig. 1. These are the bottoms and sides of the two screens.

Next saw two pieces 9 inches by 8 inches, for ends, and cut to shape as shown in Fig. 2.

Fasten all the pieces together with  $1\frac{1}{2}$ -inch brass or galvanized iron screws or nails, and place a strip of metal to hold light in position marked in Fig. 1, on each of the screens.

Sandpaper the screens all over and stain color desired. Most people paint the inside of screens the color of the light, i. e., port, red, and starboard, green, and paint the rest of the screens white.

Next get eight strips (four for each screen) of brass or galvanized iron, 1 inch wide,  $\frac{1}{8}$ -inch thick, and 6 inches long. Bend the strips in the middle to form right angles and have four holes drilled in each strip, so that when the strips are placed against the screens (see Figs. 1 and 2),  $\frac{3}{4}$ -inch screws may be fastened into the screens and into the deck.

C. EXTON DWYER, Rosebank, S. I., N. Y.

# Propeller for Engine and Hull.

How the Amateur May Select the Propeller Best Suited to His Particular Set of Conditions.  
A Lot of Excellent Suggestions on One of the Motor Boatman's Most Vexing Questions.

THE PRIZE CONTEST—Answers to the Second Question in the March Issue.

## Practical Suggestions.

The Prize Winning Answer.

TO determine the proper diameter and pitch of propeller best suited to any particular engine or hull, there are several important points to be considered.

It is obvious that a heavy working boat requires a propeller of low pitch and an engine of slow duty type turning up 400 or 500 r.p.m. A high speed engine with a wheel of high pitch would simply churn the water. The resistance of water in front of such a hull would rotate the water instead of forcing it astern, and the slip would be enormous.

To determine the proper wheel it is necessary to take into consideration the weight and the lines of the hull, also the horsepower and speed of engine. A long, narrow hull of fine lines passes through the water with so little resistance that a high pitch propeller can be used and the slip will not be excessive. Every amateur ought to know that the real horsepower of his engine is the first thing to be considered in selecting the proper wheel. If an engine develops its greatest horsepower at 1,000 r.p.m., a wheel should be used which will allow the engine to turn up this number.

Nothing is gained by using a large wheel of more blade area and consequently decreasing the number of revolutions of the engine. For the ordinary run of motor boats a pitch ratio of from 1 to 1.5 is considered about right, while with high speed boats, which slide through the water easily, a pitch ratio of 1.8 or even 2.0 is used successfully.

For the benefit of the "greenhorn," will say that a wheel of 24-inch pitch would drive a boat forward just two feet with each revolution, provided there was no slippage. It is very easy to determine the per cent. of slippage if one knows the engine speed and the distance traveled in a given time. For instance, the above propeller having a 24-inch pitch, with engine turning 1,000 r.p.m., would drive a hull 2 feet x 1,000 r.p.m. x 60 min.—120,000 feet divided by 5,280 feet—22.5 miles an hour. This is the theoretical speed, and to get the per cent. of the slip, subtract actual speed from theoretical speed and divide the difference by theoretical speed, which will give actual percentage of slip, which ought to be anywhere from 15% to 30% to produce good results.

There are no hard and fast rules to go by in choosing a propeller, as it is a fact that all speed boats have tried wheels innumerable before finding the one suited to all peculiarities of the hull. Don't install a light, high

speed engine in a heavy, clumsy hull and expect good results. Choose a suitable engine for your hull, then use all the pitch possible and still have the engine turn up its rated number of revolutions.

L. J. EGELSTON, Rutland, Vt.

## Work from Pitch Ratio.

IN selecting a propeller for a boat, one of the first things to be determined is what pitch ratio will give the best results.

Almost all propellers are made with a true screw pitch; i. e., the principle is the same as the threads on a screw. A 24-inch wheel of 43.2 pitch would advance 43.2 inches in one revolution if there were no slip. But water being a liquid, there is about an average of 20 per cent. slippage.

Wheels are made with pitch ratios from 1 to 2. 1.1 means a pitch of 1.1 times the diameter, or the diameter multiplied by  $1\frac{1}{10}$  gives the lead of the wheel.

A wheel with wide blades and a pitch as low as 1.1 is used on heavy working boats because the lead of such a wheel is more in harmony with the speed of such a boat.

The resistance of the water to a heavy boat, causes a large percentage of slippage, and a high pitch wheel would merely rotate or churn the water instead of forcing it astern. A light racing boat with fine lines, slips through the water so easily that the lead of a high pitch propeller is sufficient to move it with only an average per cent. of slippage.

As a rule, the pitch of the propeller on pleasure boats average 1.4.

Three blade wheels should always be used on boats with wide deadwood, as this does not leave solid water behind it.

A well-balanced two-blade wheel of large diameter, will sometimes give better results on a racing boat than a three-blade, as it leaves more room between the blades for solid water.

To get the proper diameter for a given H. P., follow some wheel manufacturer's catalogue, as their rating is based on experiment.

H. W. STANLEY, Grand Rapids, Mich.

## For the Full Bodied Boat.

TO determine the propeller pitch and diameter best suited to the engine and hull of a certain boat, let us first consider the engine. Naturally, horse power would be the first thought, and next comes the revolutions per minute that the engine is supposed to turn when developing its rated horse power. By horse power, of course, we do not mean

the horse power so called, but the actual brake horse power as shown by test, or as worked out approximately by rule. Let us suppose that the engine in question is a 5 horse power engine, rated to turn at 750 r.p.m. By comparing with other 5 horse power engines of the same style, we know that the engine will need about a 16-inch two-blade or a 15-inch three-blade propeller. The choice of a two-blade or a three-blade is simply a matter of the opinion of the owner of the engine. Some like one and some the other, but it is conceded by some that for a power like that under consideration, the two-blade is found to be the more efficient. Now, we have the diameter of the propeller, which if properly pitched, will be turned at the speed rated by the engine.

To determine the pitch necessary for the most satisfactory working of the engine, it will be necessary to consider the style and size of the boat in question. Let us suppose that the boat is about 21 feet long, and 6 feet broad, constructed for cruising and solid comfort and seaworthiness at a forfeit of speed. Then we know that a high pitched propeller will be disadvantageous, as it will only cut down the r.p.m., and with the power which we have under consideration, will not send the boat ahead fast enough to be profitable. It is, therefore, necessary for us to choose a propeller of low pitch, allowing the engine to turn up her full rated number of revolutions. For the case in question, a propeller with an 18-inch pitch will be found satisfactory.

Of course, if the hull is for speed purposes, and the boat is going to run through the water fairly easily, a higher pitch must be chosen.

K. J. CARTER, Gaspe, Que., Canada.

## Consult Manufacturer.

THE problem of the best propeller for any engine and hull has been discussed ever since the advent of the internal combustion engine for marine use, and the conditions vary so much in each instance that unless one is an expert in this particular line, it is almost impossible to determine the proper wheel without experimenting, which is expensive.

The best advice to anyone is to consult some reliable manufacturer, stating fully what you desire, the make and H. P. of the engine, giving a full description of the boat it is to be used in, length, beam, draft, style of bow and stern and approximate gross tonnage, if possible. This information will allow him to consult past performances under circumstances as nearly identical as possible.

CHARLES MACILROY, New York City.



### "Cut and Try."

**T**RY a few and pick out the best if you prefer a solid wheel. This, of course, is not necessary if you install a reversing propeller of the adjustable pitch type, as with this style of wheel you can set the maximum pitch just as you find it most suitable. This cannot be done in case one uses the solid wheel. Then cut and try.

You might have a boat built over the same forms as one of your friend's boats and equipped with a motor of the same make, bore and stroke, and horsepower, and yet find that the wheel suited to his outfit is not best suited for yours. Of course, you must know something as to the diameter and pitch before you start trying out a wheel.

If you are looking for a solid wheel write your engine manufacturer and get the exact horsepower of your motor at the speed it should run to give the greatest efficiency. You may have a slow speed motor recommended to run at 400 or it may be a high speed outfit most efficient at 1000 r.p.m. Avoid getting a motor that is not adapted to your boat, as if you do, no wheel will be efficient. I know of a number of cases where people have installed automobile motors supposed to run at from 1,200 to 1,500 revolutions in cabin cruiser. You can't get a wheel that is suitable for such a combination. Then get advice as to the size wheel generally furnished with the motor and information as to the speed the motor turns it. Then take into consideration the style of your boat. If it is a runabout or open pleasure boat of fair lines and your motor is of the type generally used in such a boat, i. e., one developing its power at 600 to 800 r.p.m., get a propeller that will let your motor run at this speed with a pitch ratio of approximately 1.3 or 1.4. By this I mean that the pitch should be about  $13/10$  or  $14/10$  times the diameter. If your boat is of the semi-speed or racing type, however, the ratio wants to be increased according to the speed and power. For example, a 4-cylinder,  $4\frac{1}{2} \times 4\frac{1}{2}$  motor, in an open boat, say 28 x 6 feet, ought to use

a propeller with a ratio of about 1.25, while if used in a racing boat of fine lines the ratio should be 1.5 or 1.6 and the motor in this case runs at 900 or 1,000 r.p.m., while 650 would be nearer right for the speed of the motor in the other boat. The celebrated Dixie II. has a wheel with a 1.85 ratio, while a hydroplane often has a pitch ratio of 2 and sometimes better.

Then the proposition works the other way with heavy cruisers and working boats. Boats of this class use slow speed motors running at 300 or 400 r.p.m., and the ratio is often as low or lower than one. In these boats the speed of the motor is held down by increasing the diameter and blade area and reducing the pitch.

After all is said it is still cut and try. Many of the high speed racing boats use a dozen wheels before the final decision is made.

R. C. SAUNDERS, Grand Rapids, Mich.

### Governed by Motor.

**T**HE problem of the right propeller for any given boat and engine outfit is not one to be easily figured out on paper. Experience is the teacher that has taught the naval architects and engineers practically all they know regarding correct diameters, pitches and blade areas.

Assuming that the engine is well adapted to the hull, we find that a heavy boat of large displacement is suitably powered with a heavy duty motor of generous cylinder dimensions, while a lightly constructed speed hull has a motor designed for much higher piston speed and built upon a less massive scale to safely admit of this increased number of revolutions.

The first engine mentioned must be used with a wheel of relatively large diameter and moderate pitch, with liberal blade area, so that the engine may not turn it up too fast for the best results. A small wheel of coarse pitch, if used with a heavy hull and an engine designed for slow speed, would exert little driving power on the hull, expending its en-

ergy in churning the water into foam and at the same time thrashing the motor to pieces by allowing it to over-run its safe limit of piston speed.

On the other hand, the light speed hull which "gets away" quickly, and thus permits the wheel to always work in solid water, is best driven by a small propeller of coarse pitch running at a high number of revolutions. The blade area of such a wheel need not be as great as for heavy duty work. The high speed motor with its small cylinders, light moving parts, long bearings and the valves and parts properly designed for speed work can develop its rated horsepower only at high speed. Slow speed motors as mentioned above are those which run at from 350 to 600 r.p.m., and high speed motors from 600 to 1,200 r.p.m.

It is usually wise for the novice to at first use the wheel advised by the motor manufacturer until experience shows that the selection is not what it should be. A motor rated as 5 horsepower at 500 turns, when used with a 3-bladed wheel of 18 inches diameter by 24 inches pitch (about the usual stock combination), should run at its rated number of revolutions when delivering nearly its maximum power. If in service the motor shows revolutions greatly in excess of 500, the diameter or possibly the pitch should be increased until the engine slows down to its designed speed.

If, on the contrary, the motor fails to turn the wheel up to its proper speed, the diameter may be reduced or the pitch made finer. A two-bladed wheel must be larger than one with three blades to do the same work and, unless it is driven at fairly high speed, it causes more vibration. For considerable powers the three-bladed wheel is far preferable.

Every motor has a certain speed at which it runs most economically, giving the greatest amount of power in proportion to the wear and tear, and fuel consumption. A wheel should be chosen (perhaps only after considerable experimenting), which will permit the motor to run as nearly as possible at this ideal speed.

ALLAN O. GOULD, Portland, Me.

## What Changes Shall I Make?

Some Suggestions From Last Season's Experience That Will Be of Value at Fitting Out Time. Wherein the Old Method or Equipment Was Faulty and How It Will Be Remedied.

THE PRIZE CONTEST—Answers to the Third Question in the March Issue.

**T**HERE are so many methods used in fitting out suitable for one type of boat that would be entirely inadequate for another that while one may be materially helped by observing how the "other fellow" goes about it, yet he must be governed largely by his own individuality and experience.

My wife and I have lived for the last two summers very comfortably aboard a 25-foot, raised-deck cruiser, anchored within commut-

### Lessons From a Log.

The Prize Winning Answer.

By A. ARMSTRONG, Norwich, Conn.

ing distance of the city during the week and used for cruises over the week-ends. As any advantage or disadvantage in our various equipment made itself manifest or any undue maintenance on any part of our boat was noticed, we would make a note of it in our log,

and by simply turning its leaves at this time, we can sum them all up and see at a glance how we are going about "fitting out" this year differently than we have the past two, which methods we are to retain and which we must discard.

The following table shows what our experience of 1909 and 1910 has led us to adopt as permanent and also those that we will attempt to improve upon this spring.

Painting.					
1909	1910	1911	1909	1910	1911
Varnish remover. . . . .	Scrapper, sandpaper	Wood alcohol	Stuffing box. . . . .	Outside	Inside
Bleach. . . . .			Whistle. . . . .	Hand	Burned gas
Neutralizer. . . . .			Ignition. . . . .	Dry cells	Dynamo and storage bat.
Bright work. . . . .	4 coats varnish during season	1st coat shellac, 2nd coat varnish	Sailing and cabin lights. . . . .	Kerosene	Kerosene and elec.
Under body. . . . .	Spring—Green copper. Summer—Red copper	Brown copper (fairly good)	Cabin ventilation. . . . .	Port holes	Port holes and ventilator hoods
Above water. . . . .	Yacht white	Yacht white	Ballast. . . . .	None	200 pounds
Water line position. . . . .	2" above actual W.L.	6" above actual W.L.	Ice box. . . . .	In cabin, below W.L.	In cockpit, above W.L.
Deck. . . . .	Light color	Dark color	Stove. . . . .	Alcohol	Alcohol
Cockpit floor. . . . .	Lead color	Yellow	Berths. . . . .	2' x 6'	2' x 8' (extension)
Cabin interior. . . . .	White enamel	White enamel	Storage space. . . . .	Under berths	Zink lined, under berths
Engine.			Deck Fittings.		
Lubrication. . . . .	Gravity feed	Oil in gasoline	Signal mast rigging. . . . .	Hemp	Bronze wire
Fuel tank. . . . .	Flat copper tank forward	1 galv. cyl. tank, aft	Tiller line. . . . .	Cotton braided	Bronze center
Fuel strainer. . . . .			Awning. . . . .		Waterproof canvas
Muffler. . . . .	Cast iron muffler	No muffler, water exhaust			
Pump. . . . .	Hand	Plunger, on engine			
Throttle and spark control. . . . .	In cabin	In cabin			

The table compiled from Mr. Armstrong's log shows at a glance the results of his experience in 1909 and 1910 with various methods and equipments.

## A Good List of Dont's.

I AM not making many changes this year simply housing in the engine and making a cross-seat forward, but the following are my list of don'ts from past years:

Don't hurry the cleaning or putting together of the engine.

Don't put back parts that show signs of much wear.

Don't have wiring concealed or under flooring.

Don't make the final connection in the gasoline pipe until the tank and piping have been flushed out with gasoline.

Don't put any gasoline in tank without straining through chamois.

Don't connect exhaust to side of boat with iron pipe. Use a short rubber connection to lessen vibration.

Don't use all plain couplings on shaft. Have one a universal joint with a bearing back of it.

Don't trust to set screws holding propeller shaft without having them countersunk in shaft.

Don't have flywheel or coupling of engine exposed.

Don't trust to an outside stuffing-box. Have an inside one anyway.

Don't use a leaky battery box or have it in an exposed place.

Don't use a single set of batteries. Series multiple last longer.

Don't use a toy whistle.

Don't try to do with the smallest amount of anchor rope or one anchor. A few extra fathom come in handy at times.

Don't omit the ammeter if dry batteries are used. It will pay for itself during the season.

Don't put the compass near the right place. Have the right place marked permanently.

Don't trust to spark plugs in engine or working parts of the make-and-break device. Have one extra in case of trouble.

Don't use bronze and galvanized iron together.

Don't trust to clothesline rope or small sheaves for tiller line.

If two steering wheels are used have separate lines to quadrant.

Don't try to do without a good turnbuckle in tiller lines.

Don't use cheap gear or fittings. They are apt to be expensive.

Don't omit the locks on your lockers.

Don't try to use an open boat without a spray hood.

Don't plan to stand at the wheel all day in pleasant weather. Have a comfortable cross seat.

Don't try to avoid the law in regard to life preservers, etc.

Don't start the season with a lot of chips or dirt in the bilge.

Don't trust to someone else.

Don't paint over the water intake.

WALTER L. McCAMMON, Auburndale, Mass.

## Heavier Anchor, Sails, etc.

PROFITING by last year's experience we are going to make the following changes and additions to our cruiser:

1st. A trap and strainer is to be fitted in the gasoline pipe so that when we get in a heavy sea and the boat begins to roll, stirring up the deposit of dirt, galvanizing, water, etc., in the bottom of the tank, instead of clogging up the carburetor and finally stopping the motor just when we need it most. This foreign matter will be caught in the trap.

2d. As we do quite a little cruising often some distance from shore we are going to fit a small mainsail to jib forward and a jigger aft, so that in case the motor becomes disabled we will not be perfectly helpless. The value of sails was enforced on us last year when the bronze shaft cut off in the coupling owing to the fact that the set screws kept loosening up. Tightening them repeatedly finally cut through the shaft. We had a small signal mast rigged forward primarily for decorative purposes, but in this particular instance we bent in a bed sheet and sailed safely into port and up to a repair shop without the slightest difficulty.

3d. The trouble we had with the set screws is a common one. Even though the shaft is slotted, if it is the least bit out of line, the screws will loosen it up and let the engine race. To avoid repetitions of this trouble we will fit a key in the coupling as well as the set screws.

4th. Last year we had two anchors each weighing the same number of pounds, as the boat is long in feet. These answered very well under ordinary circumstances, but were not heavy enough in a strong wind and tide. This year we will have an anchor double the weight of our present ones.

6th. We have a two-cylinder, two-cycle motor which back fires badly when running neutral. We have found that putting a switch in the lead to the timer of one of the cylinders so that it can be cut out, the other cylinder will run very nicely the compression on the idle cylinder making enough load to keep it from racing. Another advantage this arrangement offers it that when it is desired to run slowly one cylinder can be used resulting in quite a saving of gasoline.

F. H. MALONEY, New Haven, Conn.

## The Value of Experience.

AFTER all, real personal experience is the only teacher. Nearly all improvements which I shall make in fitting out this year I have read about many times, but until I had trouble I considered I did not need them, or else what I had was good enough.

The first thing will be to put on an inside stuffing-box, replacing the one now on the outside of the stern post with an adjustable stern bearing. One long session with a bilge pump is sufficient. The under-body will be cleaned and made really smooth. This part of the work will be hired out to someone whose arms and back are hardened to this kind of work, and who can put the necessary "elbow grease" into the scraper and sandpaper. Moreover, this under-body will be covered with the best non-fouling preparation that can be had if it takes the last cent (and will someone please tell which this is). I have come to the conclusion that if economy in fitting out is necessary, the under-body of the hull is the last place to try it. Who wants to haul out in the middle of summer, to say nothing of loss of speed and the increased amount of gasoline used.

And speaking of paint, be not deceived into thinking that a black hull does not need to be scrubbed. It does, and nearly as often as the white, without the satisfaction which a glistening white hull gives after the job is done.

In the self-bailing cockpit the scuppers will be enlarged to 2 inches at least, to care for the small flood which many summer squalls let down, to say nothing of a good big head-on sea. Stops for the rudder quadrant will be fastened to the deck to prevent the rudder jamming when backing up. The tiller ropes are now all in sight, but this year they will be wire or have a wire core. The outboard discharge of the cooling water will be moved to where a glance over the side by the man at the wheel will tell how the pump is working. The strainer which was put in the gasoline pipe last year will be moved as close to the carburetor as it will go.

Nothing has been said about the engine. Slight adjustments can readily be made, but if it needs overhauling, unless you are a machinist with a kit of tools, send it to a shop where you know they will do careful work. Don't wipe off grease and dirt and paint it and then think the engine has been overhauled.

There will be no varnish or glossy paint where it is exposed to the weather. It looks good at the launching, but aside from the yachts of the wealthy, looks pretty scabby by the end of the season. Good quality oil paint

with the aid of soap and water will look much better before the summer is half gone.

The galley is already supplied with wide bottomed enamel ware cups, but the plates will be donated to the house pantry and nothing shallower than a soup plate allowed. The lid of the coffee pot has been fitted with three small brass chains which come down and hook onto the rail of the stove. The coffee pot has been known to be top-heavy when loaded to the muzzle for a hungry crew. We attended the auction of a defunct candy store and now have several square, wide-mouthed glass jars which we think are going to prove a great improvement over the preserve jars used last year for food and supplies.

The comforters in the bunks will get damp and take a long time to dry out. We shall use blankets this season. Two Kenyon cushions used last year proved a great success. So the fancy pillows will be replaced as fast as the pocketbook will allow.

The cabin is satisfactory, but we are going to have a new table with a folding leg at one end and a pair of hooks at the other. These hooks will drop into sockets on the side and bulkhead of the cabin and there will also be some sockets in the cockpit. This will give a firm, steady table, which can be set up where most convenient, either in the cabin or outside in the cockpit.

So much for this year; no doubt there will be as much more next spring, for half the pleasure with a small boat to the one who really loves boating, is planning and making these little changes which go so far towards comfort and convenience.

WM. GEO. ALLEN, Portland, Me.

## Better Be Sure Than Sorry

SINCE fitting-out time last year I have learned that motor boats ought to be groomed as carefully as a valuable horse to insure the outfit being in pink of condition. This season the job will be thorough, beginning with the keel, which I shall protect with a false piece to take chafing and battering when afloat or in hands of storage men. It's easier to rip off a false keel  $\frac{3}{8}$ -inch thick than to tear out a boat's backbone. New keels are expensive to fit and keels badly broomed and gouged hurt the appearance of a boat when it is offered for sale.

The matter of location of stuffing-box will also claim attention because of past experience with such things. The inside stuffing-box is all right providing another stuffing-box is fitted outside. An ordinary stern bearing, I have found by experience, admits grit that wears the propeller shaft in rings the whole length of the shaft hole. I propose to set up the outside stuffing-box just tight enough to exclude grit, and the pressure of the packing will not slow down the motor enough to make much difference in power.

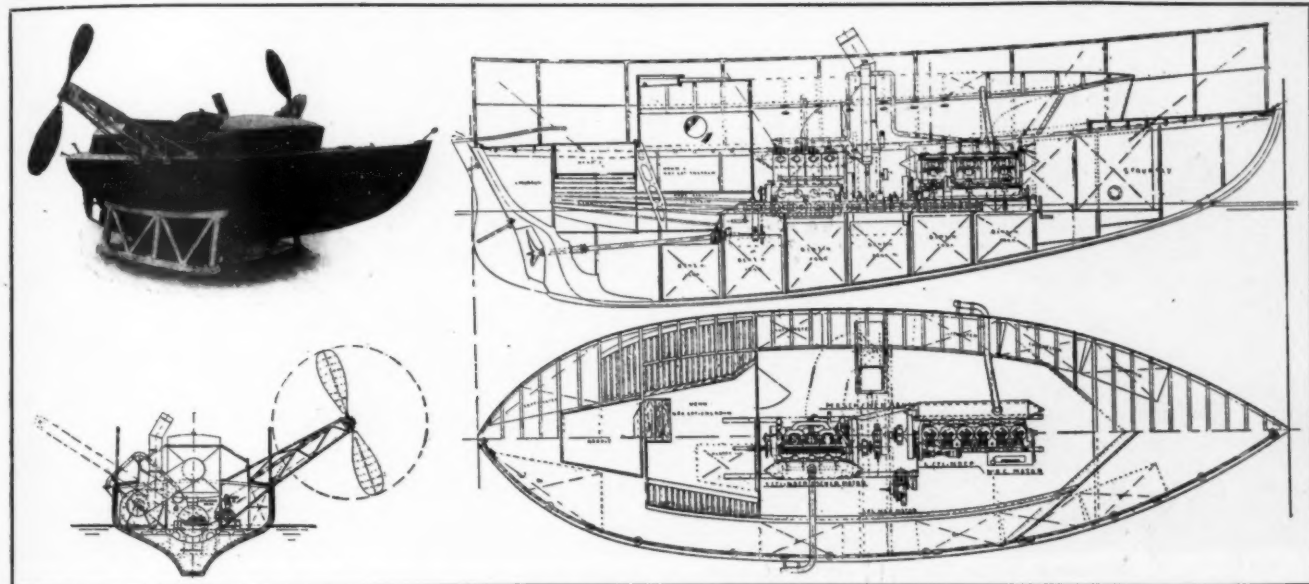
Lag bolts that secure the stuffing-box will be withdrawn for inspection because these lag bolts are apt to corrode inside the wood or break off, through stress. Some lags are made from cheap composition that is particularly susceptible to chemical action. A cast lag is a poor thing for under water purposes, anyhow. This season I shall get drop-forged Tobin bronze bolts and, to make sure of permanency, shall fasten a piece of pure zinc to the deadwood which, I am assured, will be attacked by galvanic action, permitting the bronze to remain intact. I shall also secure my motor to the foundations with brass lags instead of iron because iron destroys the wood about the threads by a deposit of rust, thus spoiling the grip. Sometimes a motor shakes on its foundations when iron lags have refused to hold, giving one the impression that the bed itself is loose.

In order to protect the boat from sinking when at moorings I am going to place a shut-off cock in the water circulation close to the inlet. The man who installed the plant didn't use such precaution, saying it was not necessary. But I want to be positive no mishap

(Continued on page 54.)



# MOTOR BOATING ABROAD.



The underbody of the boat-car is shaped somewhat like that of a sailing vessel and the hold is divided into compartments for the storage of gasoline.

## Trans-Atlantic Dirigible Boat-Car.

Combined Motor Boat and Car That Will be Attached to the German Trans-Atlantic Dirigible. Her Two Separate Power Plants That Drive the Marine and Aerial Propellers.

**I**NSPIRED by Mr. Wellman's attempt to cross the Atlantic in a dirigible balloon, an attempt successful principally in that it added considerably to the gaiety of nations, the Germans are soon to make a similar attempt with the airship "Suchard." Probably inspired also by Wellman's idea of carrying a motor boat, the Germans will also adopt this feature, but instead of suspending the boat beneath the car, it will take the place of the latter and will contain all the propelling machinery.

At the top of this page are shown the design of this boat-car and a photograph of the completed boat. The hull was constructed at the Lürssen Yard and is 33 ft. in length by 10 ft. beam. The double diagonal system of planking has been used and this planking which is of white pine is secured to steel ribs. The keel, stem and stern post are of mahogany. The deck is double planked with mahogany and between its layers and those of the hull is a layer of specially prepared sail cloth.

As will be seen from the lines, the engine compartment occupies practically one-half the length of the boat. The power plant consists of two complete sets of propelling machinery and a small, single cylinder, four horse motor for driving a blower. The two aerial propellers which are carried on steel trusses extending from either side of the boat at an angle of about 40 degrees, are driven by a six cylinder 100 horse power N. A. G. engine by means of

chains. The four cylinder motor aft is an Escher, also of 100 horse power, and this drives an ordinary screw propeller by means of chains as shown in the profile. The engines may be coupled together by means of a clutch so that the full 200 H. P. may be utilized for driving the aerial propellers if so desired. The blower is used to force air into the envelope.

### A German Amphibious Motor Boat for Africa.

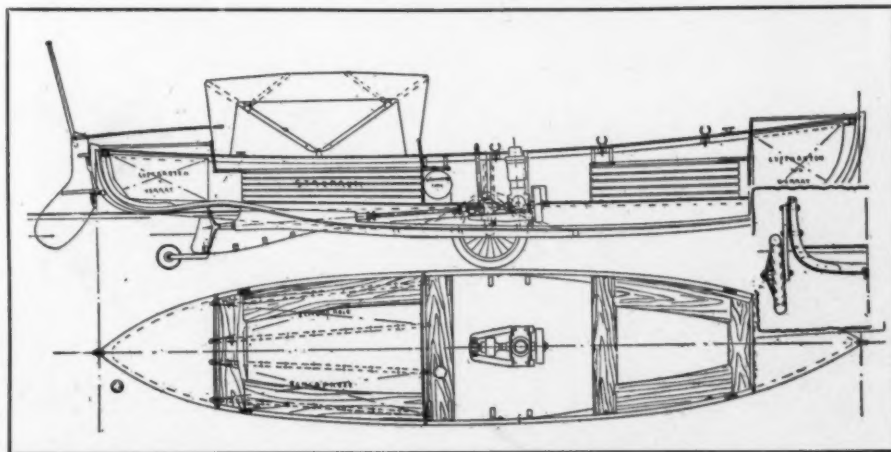
**A**NOTHER interesting craft, recently completed at the Lürssen Works in Germany, is shown at the bottom of the page. The boat was designed for an African exploring expedition and will be used on the Zambezi River and its tributaries, and in order to make possible portages around rapids and to the numerous lakes in this little known part of Africa, she is provided with a set of wheels.

There are two large ones, one at either side amidships, and a small trailer attached to the skeg. These wheels are similar to those used on automobiles, and there is no connection with the motor as it would only complicate the mechanism, and it is considered more practical to push the boat by hand when making portages.

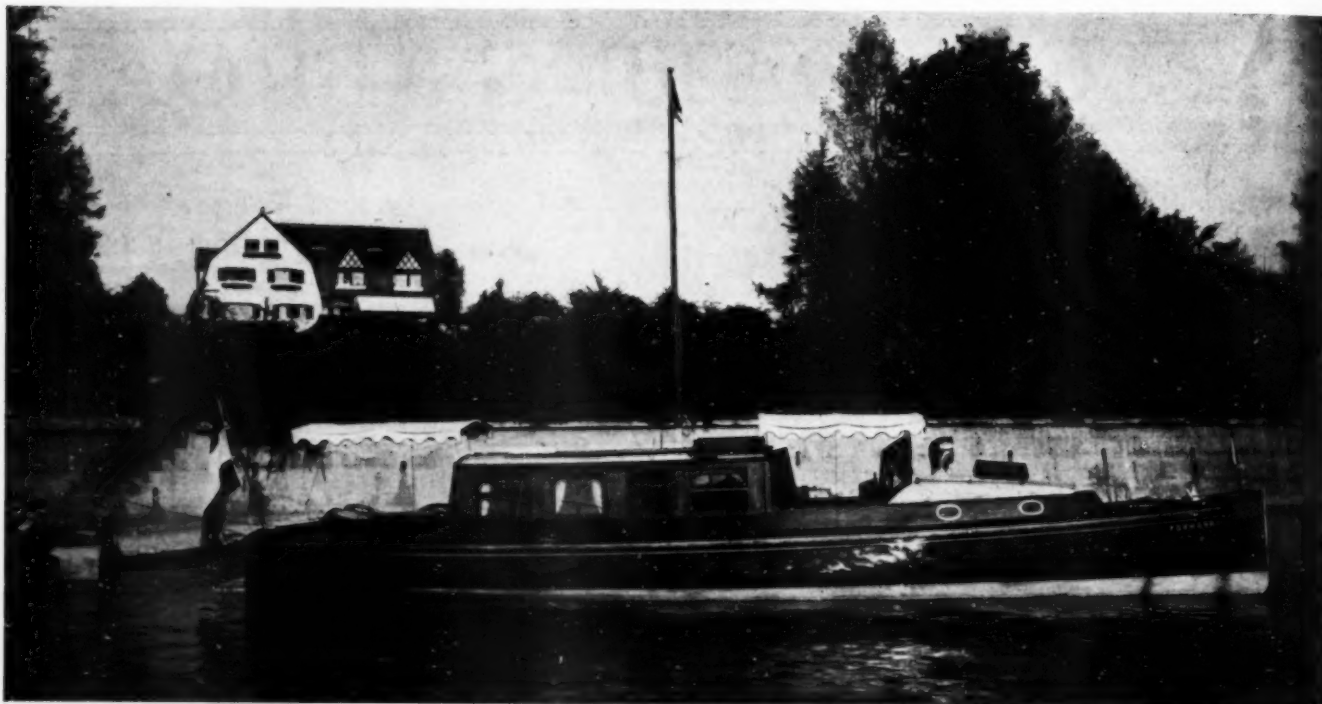
To reduce the draft the tunnel construction has been employed and the wheel is further protected by a skeg. The motor is installed amidships and is a 5 horse-power machine using kerosene, a large quantity of which will be carried inland and left at various points for the return trip.

The boat is divided into two cockpits by the engine compartment, the forward one for the native guides and the after one for the members of the expedition. This cockpit will be used as a sleeping compartment and is covered by a folding top. In the extreme bow and stern are two watertight compartments for the storage of provisions and equipment, and under the cross seat amidships is located the gasoline tank.

In design, Sarotti, as she has been called, is of the whale-boat type, about 27 feet over all by 5½ feet beam and is rather flat on the bottom, although no great effort has been made to reduce the draft besides tunneling the stern. The rudder is hung outboard on the stern post so that it may easily be unshipped when going overland, and for further simplicity, a tiller is used instead of the usual lines, etc. A speed of nine miles is expected.



A German amphibian that may be pushed overland in making portages.



Kormoran is the Lürssen-Daimler 43-footer, the design of which appeared in the January issue.

## The Olympia Show.

**Third Annual Motor Boat Exhibition Held by the Society of Motor Manufacturers and Traders.  
— Impressions of the Show and a List of the Exhibitors of Engines, Boats and Accessories.**

**T**HE third International Motor Boat and Aero Exhibition held recently at Olympia, was a striking object lesson in the

development that is being made by the British companies in the design and construction of the motor boat and its power plant. Although an international exhibition, by far the majority of the exhibitors of both boats and engines were English firms, and their exhibits were even better attended than was the case last year, when the aeroplane was still a novelty and brought the attendance up to a large figure by virtue of this fact.

The section of the exhibition devoted to motor craft, accessories and engines was not only much greater this year than at last season's exhibition, but instead of being grouped along the side of the building under the balcony and subordinated to the aerial part of the display, the marine exhibits were given the center of the main floor of the great exhibition hall.

The most noticeable feature of the exhibition, in which it differed from our own shows, and a fact explained probably by the lack of proper transportation facilities, was the almost total absence of cabin cruisers, there being but one of

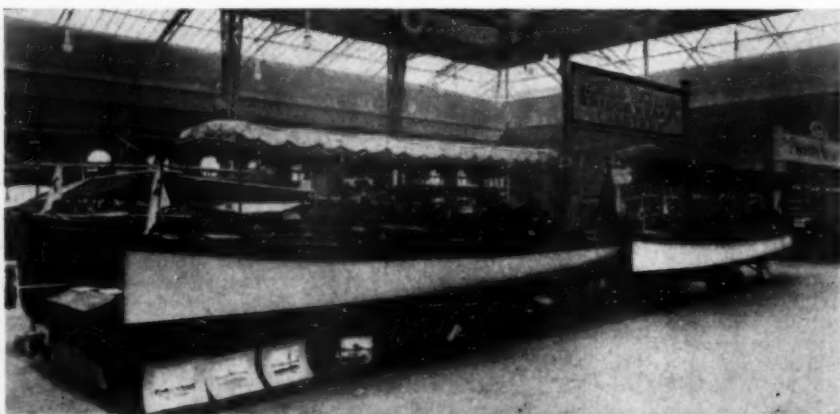
this class of craft on exhibition. Most of the boats were open launches of moderate size.

Among the motors there was no such lack

and the latest products of all the principal manufacturers were shown, and a striking fact

much more noticeable this year than heretofore was the close relation between the power plants of the aeroplane and the light racing craft, especially the hydroplane. For example, the Woolsey aero engine is adaptable to either service.

The exhibition was conducted by the Society of Motor Manufacturers and Traders and the following companies were represented: Ailsa Craig Motor Co., Aster Engineering Co., Auxiliary Power Co., Belton & Co., Bolten & Paul, Ltd., J. W. Brooke & Co., Drummond Brothers, Fairbanks Co., H. E. Hall & Co., E. Hayes, J. King & Co., Maudslay Motor Co., Moonbeams, Ltd., Morgan, Giles & May, New Engine Motor Co., Parsons Motor Co., Renault Freres, Seal Motor Co., Seamless Steel Boat Co., James Taylor, J. I. Thornycroft & Co., White & Poppe, Wolseley Tool & Motor Car Co., S. Bowley & Son, Bowring Petroleum Co., Hesse & Savory, "Hilo" Mfg. Co., Hoyt Metal Co., Henry Hughes & Son, Langdon Patent Silencer Co., H. D. Morgan & Co., Price's Patent Candle Co., Samuel Brothers, S. Smith & Sons, and Valentine & Co.



Some of the examples of British boat building seen at the Olympia Show.



# Scotch Commercial Motor Boats.

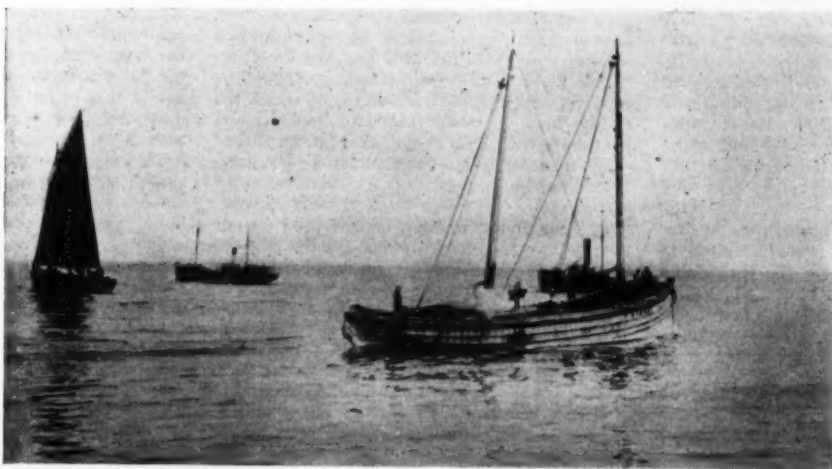
Remarkable Performances of Craft That Have Been Equipped with Internal Combustion Engines.  
The Great Field for the Manufacturer Among Britain's Fleet of 10,000 Fishing Vessels.

By J. Rendell Wilson.

**D**URING the past few years there has been a remarkable development in the adoption of the internal combustion engine among the vessels of the Scottish fishing fleet. In a period of about two years, one hundred vessels of various dimensions have been equipped with motors running all the way from 7 to 90 horsepower.

Each week during the fishing season the power craft prove their advantage over the sailboats by running to port with their catches regardless of weather conditions, and also by towing their less fortunate sisters. The majority of the larger craft used kerosene as fuel for their motors, but a number of the smaller boats are using gasoline.

As yet the American firms have made but little headway in selling their product to the canny Scot, but there is ample opening and three of the larger vessels are already fitted with Remington engines, while Ferro motors



Sardius, a Scotch fishing vessel. She is equipped with a 40 h.p. Thornycroft motor.

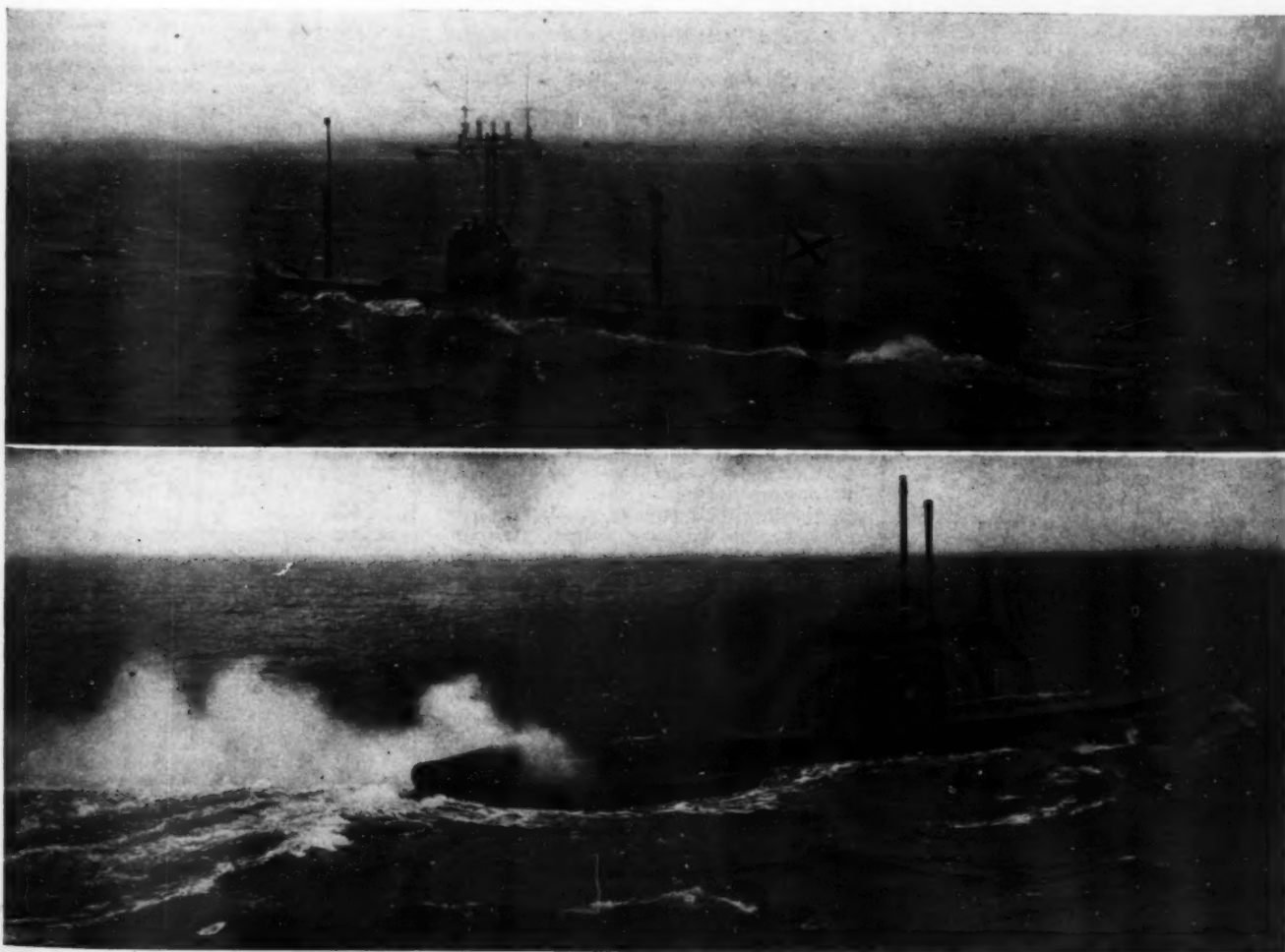
are installed in quite a number of the smaller craft. That fishermen are favorably disposed toward American motors is shown by the fact that the Gray Motor Co. has been unusually successful in selling its product to the fishermen of the Channel Islands.

During fourteen weeks twenty-three of the herring boats working off Frasierburgh secured catches which were sold for over

\$50,000. By careful investigation it has been found that the fuel bill for this period amounted to about \$6,752, so that after paying the men and allowing for repairs, etc., the profits for the short period must have been in the neighborhood of \$30,000. Of these boats Buchans, equipped with 55 h.p. Gardner motor, gave the best results financially, her gross earnings being nearly \$3,600, and Nellie, fitted with a 36 h.p. Alpha motor, ran a close second, with a catch selling for \$3,250. The average of the 21 remaining boats was \$2,250, while the highest

mark reached by any of the sailboats covering the same ground at the same time was about \$2,400, with an average for the sailing fleet of only \$1,050.

When these facts become generally known there is sure to be a great demand for simple, compact, slow turning motors along the shores of Great Britain, as it is estimated that there are 10,000 sailboats engaged in fishing.



The trial trips of the two new German submarines, Kambala and Kabben. See the sectional view on page 13.

# Steering Gears and Arrangements.

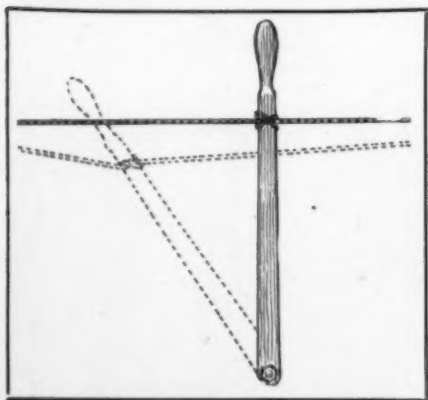
The Evolution of the Motor Boat's Steering Gear and the Types Best Suited to One Man Control. The Arrangement of Tiller Lines, Wheels, and Other Parts to Obtain the Best Results.

By Harold W. Slauson.

IN the early days of sailing ships, a long tiller projecting forward from the top of the rudder post was the only means of controlling the rudder. This is the simplest and most direct form of steering, and is still in use on many small boats. As the ships increased in speed and size, it was found necessary to make use of some mechanism whereby the rudder could be moved more easily and held in any position desired without so much effort on the part of the helmsman as that required by the tiller alone. This resulted in the use of a rope attached to the end of the tiller and wound around a drum which was turned by means of a wheel fastened to it.

The spokes of this wheel projected beyond the rim and formed handles which could be grasped firmly by the steersman. In order that the old salts of the period, who had stood for years at the end of a long tiller, should not become confused by the introduction of "them new-fangled steerin' gears," the mechanism was so arranged that a turn of the wheel in one direction would send the boat in the opposite direction. This corresponded to shoving the tiller to port to turn the boat to starboard, and is the origin of the "opposite" steering found on the majority of larger vessels to-day. The introduction of "automobile control" on the smaller motor boats, however, has created a tendency leading toward the installation of direct steering gear on power craft of all kinds, and to-day we find many of the old-fashioned type of wheels arranged to turn in the direction in which it is desired to go.

The bow of the boat is the logical place for the location of the steering wheel, for the pilot may then have an unobstructed view of the course ahead. The wheel at the bow may be of the ordinary type with spokes and handles, or it may be a typical tilted automobile wheel having a plain, smooth rim. This latter type is well suited for use in small and medium-sized motor boats, but the connection of the wheel with its slender steering post cannot be made sufficiently strong to transmit

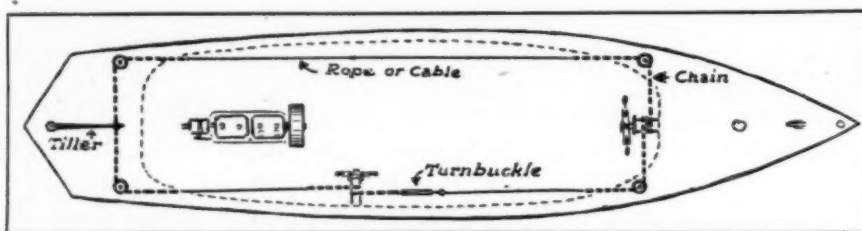


A simple lever causes uneven tension in the lines.

the power required to move a large and heavy rudder, and this form consequently is not adapted for hulls more than forty or fifty feet long.

The automobile steering wheel is very sensi-

tive and it is well suited for delicate control. The steering post terminates in a pinion which meshes with teeth cut in a horizontal rack to which the rudder line is attached. This furnishes a gear reduction by means of which the rudder may be easily turned to its limit and held there with little or no effort on the part of the steersman. This gear reduction, however, should not be so great that several revolutions of the wheel will be required to turn the rudder its maximum amount, for the tiller cannot then be swung suddenly enough in case of emergency. Quickness of operation must be sacrificed if the extreme of ease in turning is desired. The ease and quickness with which



With this system the open boat is easily handled by one man.

the rudder may be turned with the ordinary wheel depends upon the relation of the diameter of the drum around which the steering cable is wound to the diameter of the outer rim to which the handles are attached. This steering wheel drum is generally of wood, and if too much effort is required to turn the boat, and it is not desired to install a larger wheel, the drum may be removed and cut down on an ordinary wood-turning lathe until the desired diameter is reached. This will enable the rudder to be moved more easily, but a greater number of turns will have to be given to the wheel to obtain the sharpest swing of the boat, than was the case before the drum was changed.

One-man control is a desirable feature found in the majority of motor boats under fifty or sixty feet in length. This is easily provided for in the auto boat, in which the motor is located under the bow deck and the throttle, spark and reverse levers can be placed close at hand near the steering wheel, but in the case of the hull having its engine amidships or in the stern, a different problem is presented. If one man is to control a boat of this type, his position, manifestly, should be near the motor, rather than in the bow at the steering wheel. In this case, it is necessary to introduce some form of auxiliary steering arrangement in the rudder line near the motor. The most satisfactory arrangement is a small wheel having a smooth rim and no projecting handles. This may be fastened underneath the coaming to the side of the hull or the lining of the cockpit and operated on the main rudder line in the same manner as the wheel at the bow. Since there are no projecting handles, this will occupy but little room, and even though it must be installed over a locker or seat, a wheel of this kind will not interfere seriously with the capacity of the cockpit.

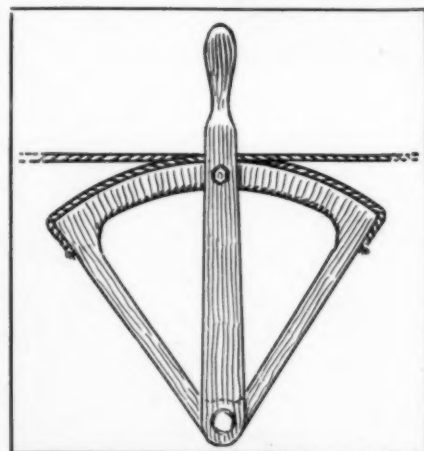
One of the simplest arrangements for auxiliary steering is a long, wooden handle, or lever, the lower end of which is hinged or pivoted to the floor or hull of the boat. The rudder line is attached to this lever about midway between its upper end and the pivot in such a relation that, when the handle is vertical, the tiller is straight. By moving the handle forward or backward the rudder will be moved a corresponding amount in one direction or the other. The ease with which the

boat may be steered with this arrangement depends upon the relation between the length of the lever and the distance from the pivot to the point at which the rudder line is attached. While this is an exceedingly simple arrangement, it has the disadvantage of giving uneven tension to the rudder line whenever the lever is moved away from the vertical, and consequently a certain amount of slack must be provided for when the boat is moving in a straight line. As any variation in the tension of the rudder line detracts from the sensitiveness of the steering gear, this side lever is not a good arrangement for boats in which the greatest delicacy of control is desired.

By attaching to the lever grooved or toothed quadrants of an iron wheel over the edge of which the rudder line will pass as the handle is moved, the cable can be kept at the same tension for any position of the rudder. The swing of this lever occupies so much more room than the ordinary small wheel, however, that the latter is far more desirable in the majority of cases.

The strain upon the rudder line of a heavy or a fast motor boat is tremendous when the tiller is turned hard to one side or the other, and it is only the strongest chain, cable or rope that can withstand such a tension. A break in the rudder line at an inopportune time may result in serious injury to the boat, and, possibly, the occupants, and it is consequently necessary to pay as much attention to the details and arrangement of this part of the equipment as it is to the installation of the motor or the general arrangement of the hull. Not only must the rope, cable, chain, or whatever material is used for the rudder line be of the best quality, but it must be so arranged that the possibility of wear is reduced to a minimum—and yet all parts must be easily accessible in order to repair quickly any break which may occur.

The simplest and cheapest form of rudder line is rope—either manila or hemp—and this



The quadrant employed to preserve uniform tension.

is well-suited for small boats such as slow-speed motor skiffs and canoes. Although this rope may be stretched before installation and rendered waterproof by continued soaking in linseed oil, it will not make a sufficiently strong



or satisfactory rudder line for any boat driven by a motor of over eight or ten horsepower, and some other material must be used. The strongest type of line is the steel wire cable, but this is expensive and is only used on the larger type of boats. A steel cable, furthermore, is generally too stiff to pass easily around small blocks and the drum of the steering wheel, and consequently it is generally replaced by a chain at these points to furnish the desired flexibility to the line. Cable and chain can be obtained, of course, in a variety of sizes, and the smaller diameters should not be found too unwieldy for use in the medium-sized boats. There are several substitutes for a cable on the market, however, all of which are a sort of combination of rope and wire. One of these consists of a manila or hemp rope core covered with wire. This prevents the rope from stretching as much as would otherwise be the case, and the fact that the line is not composed entirely of wire gives it much more flexibility than would be found in a cable. The strands of the wire covering, however, are liable to break, particularly at points where the line passes around a block—and, as the rope alone will be insufficient to withstand the strain of the rudder, this may be found to be a short-lived arrangement.

Another form of steering line which is supposed to combine the strength of the cable with the flexibility of the rope might be called a "wire reinforced rope," or a "rope-covered cable." This line consists of a steel or bronze wire core around which are woven several layers of strong manila or hemp cord. If this has been woven properly and then waterproofed after completion, a strong, inelastic rope should be furnished which should show no signs of wear at the end of several seasons' use. The one objection to a line of this kind is to be found in the fact that the tight weave of the cord

covering and the waterproofing process will have rendered it rather stiff and unwieldy for use in pulley blocks or around the drum of the steering wheel, and it thus possesses in part the disadvantage of a wire cable. By combining this reinforced rope with a strong steel chain, however, a suitable rudder control can be made which will prove efficient and durable for use on medium-sized and heavy boats.

In this case, the rope-covered cable should be used only on the straight runs where the line does not have to make a sharp turn around a block or drum of a steering wheel. This will probably mean that there will be two lengths of straight cable—one for either side of the hull. To both ends of each rope, or cable, should be attached a length of chain, each link of which has been perfectly welded. One of these chains—which will be attached to both lengths of cable—should pass through the forward blocks and around the drum of the steering wheel. The other lengths should be attached to the end of the cable near the stern blocks and should pass through them and on to the tiller. The lengths of cable should be arranged so that when the rudder is thrown to its limit in either direction, the points at which the two kinds of steering lines are spliced, or joined, will not come within a foot of the nearest block. This allowance of a foot in either direction will enable slack to be taken up in the line after the rope and chain have been installed without any danger of the joints coming in the way of the blocks. A small brass or galvanized-iron turnbuckle should be inserted in the line at one of the forward joints between the rope and chain, and by properly regulating this, almost any desired tension in the rudder line may be obtained.

Even with as strong a steering arrangement as this, the line may sometimes part under the strain induced by a large rudder, and in this

event it will in all probability be a link of the chain which will give way. This is one of the strong points in favor of this steering arrangement, for if something must give, it is better that it should be the accessible chain, rather than the hidden portion of the rope or the loosening of a block from its fastening. Aside from its greater accessibility, the chain is more easily repaired than is the rope, and the parting of a link should not cause a delay of more than five minutes. This repair can best be made by the use of a few inches of well-annealed stove pipe wire, threaded several times between the alternate ends of the chain to replace the broken link. If this is done properly, a repair will be effected which will occupy no more space and which will be even stronger than any other link of the chain. It is in making a repair of this kind that the advantage of the turnbuckle installed in the rudder line will be seen. If the turnbuckle is first loosened while the ends of the chain are wired together, a much better job may be accomplished than if it was necessary to work with the links in tension. After the repair has been made, the turnbuckle may be screwed up and the line will be left as tight as it was originally.

In locating the blocks for the rudder line, it should be made certain that all are secured to a substantial foundation either by heavy screws or by bolts and nuts. Each block should be so placed that the chain enters and leaves the pulley in the line of its groove, and the forward blocks should be fastened in a line at right angles with the axle of the drum, so that the chain will wind evenly without "climbing" when the wheel is turned. Blocks should be secured so that the pull from the rudder chain comes at right angles to the length of the screws holding them, or otherwise these screws may eventually become loosened and will pull out from the wood.

## Choosing the Right Boat.

How One's Ideas and Ideals of What a Boat Should be Progress as His Experience Broadens.  
Timely Suggestions for Those Who are About to Join the Ranks of the Motor Boat.

By H. P. Ward.

NOW that the season is well launched and the boats are again overboard, how many of us are fairly satisfied with the craft upon which we have spent so many days and nights and week ends, to say nothing of the elbow grease of fitting out? Let us make it clear that "us" are cruising motor boat men, not owners of racers—men of limited means who run our own boats and care for them because we like to do it.

The man who began the season with an 18-ft. open boat feels sure that with a 21-footer, with a small cabin, he would have all the room he would possibly use. The owner of a 21-ft. hunting cabin boat sees how infinitely superior to this type would be a 30-ft. raised deck cruiser, and the present owner feels sure that with a 42-ft. bridged deck boat he could round the Horn. It is this continued striving for something just a little better that makes for progress in all lines, but it seems particularly true in the case of the possessions of motor boat men.

The writer, who has been the owner of several small boats and is still moving up the line, made the mistake of having his second boat built according to his own ideas. He naturally did not know that it was a mistake at the time; on the contrary, he was sure that with his season's experience he knew just what he wanted. He did, but one season's experience did not make him competent to judge of his actual need.

If you have never owned a motor boat and are thinking of buying one next season, or if you have owned one and are thinking of getting a better one, my advice is to make up your mind to just what you think your requirements are, then pick out the boat that

comes nearest in design and equipment to your preconceived ideas and purchase it. Before the middle of the season you will be pretty sure to discover that you did not know exactly what your requirements were—you probably will find that you needed a little larger boat. Go through the same process again; you will be lucky if you pick your ideal this time, but at the end of three or four seasons you should be a pretty good judge not only of what you want but of what you need. If you have started off with an 18-footer your last boat was probably 40 feet over all and your next one will be at least as long. Don't make the mistake of starting off with a big boat unless your ultimate ambition is a sea-going yacht and you have the money to buy one. Half the fun of the game is growing up, each year getting a larger and more perfectly equipped boat. By buying second-hand boats you save money on both ends. They can always be bought reasonably and when you have had your season's experience you need take but a small loss on a sale. The selling loss on a new boat even is, as a rule, considerable.

Now let us suppose that we have worked up through three or four seasons' experience, have bought and sold three or four second-hand boats of various types, each coming nearer to our ideal and are now ready to use our experience and limited capital in building a cruising boat which must last us for some years. Our experience has taught us that in spite of our early imaginings we really do not roam the high seas in our little craft, we do not stock up with gas, oil and provisions and take a run down to Bermuda for our vacation or over a week end.—on the contrary we take on the necessary stores, start

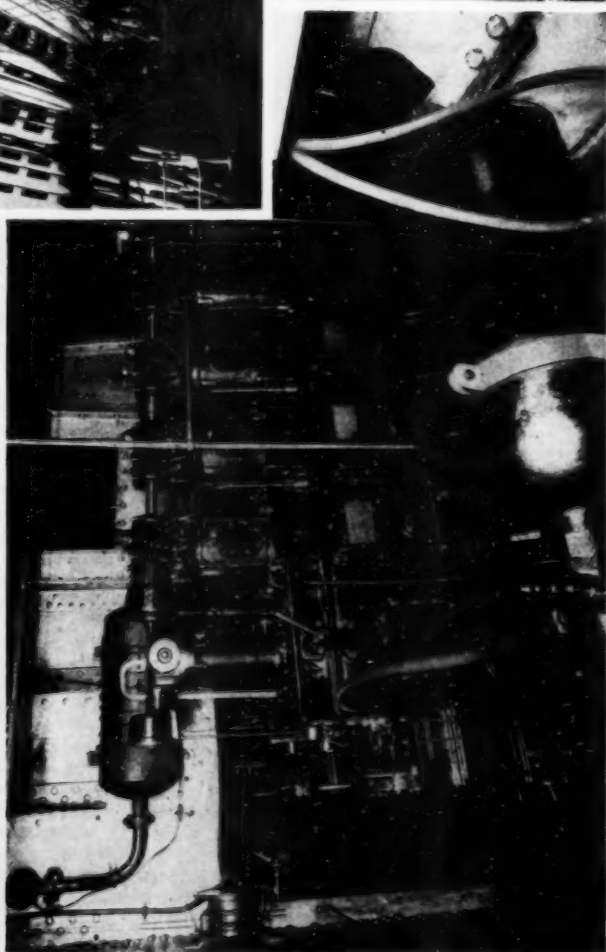
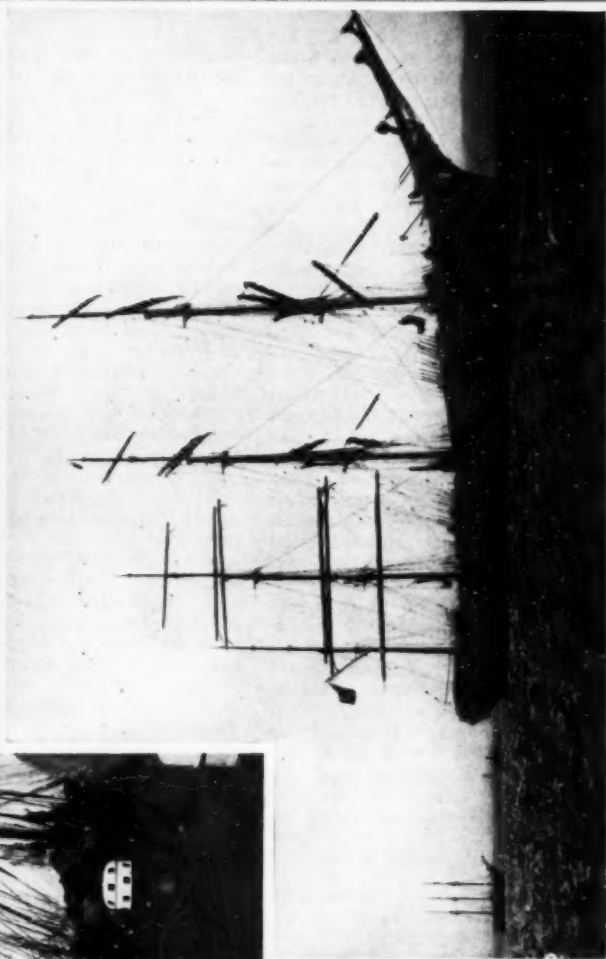
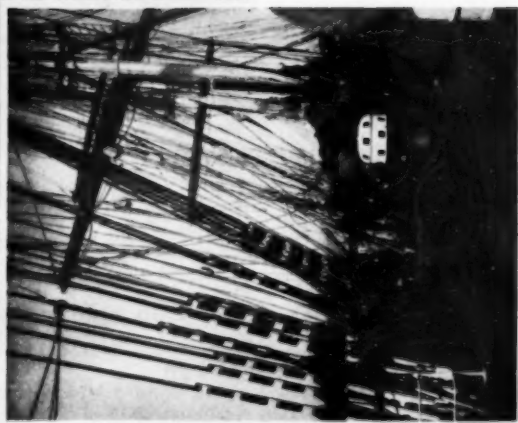
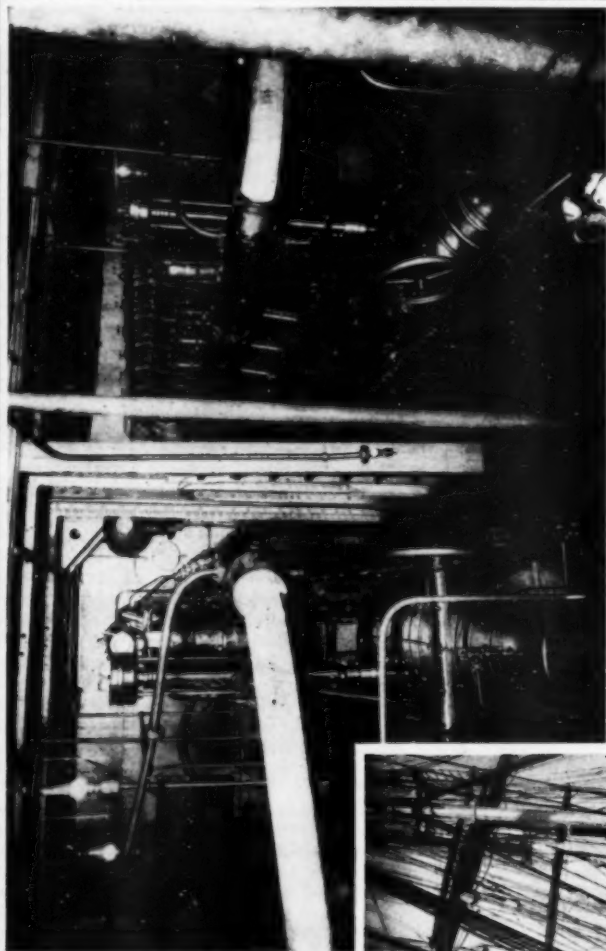
off on a Saturday motoring run up the river or sound or down the bay, put in at a quiet little harbor over night, cook our dinner and breakfast there, have a good night's sleep and next morning maybe run out into open water. But, barring accidents, we're back again at the home port anchorage by night-fall.

Does the above sketch of a couple of days on our boats give us an idea of what our requirements are? To the writer it suggests a boat in the design of which comfort takes precedence over speed. Tony Weller's "Vidith and Visdom" seems peculiarly applicable to the design of a cruising boat. Most of us are in a hurry from Monday morning till Saturday noon. Let us be leisurely over the holiday. "Leisure" suggests at this point a slow turning motor. A beamy boat should have one; they are more reliable and last many times longer than ones with a high r.p.m., besides this, a slow turning motor with a large propeller will be found more efficient in a cruising boat than will a high speed motor, especially in rough weather.

Our experience has taught us that we do not deliberately weigh anchor and start out for a pleasure trip in the teeth of a gale, but even the most weather-wise of us may get caught in one. For this reason let us have a strongly built boat with plenty of freeboard and draft. She won't be as fast, but "what's the use?" when we do get caught in a gale with a nasty sea we won't have our holiday spoiled by worry. Give us plenty of sea room and the rough weather is the "sauce piquante" of the trip.

We have thus far decided upon a strongly built, beamy boat with good draft and free-

(Continued on page 54.)



The French bark Quevilly, with auxiliary motors aggregating 600 horse power. Quevilly is a French oil bark, that arrived recently in New York Harbor. Although still employing her sails as her principal means of propulsion, she is no longer dependent upon them, as she has been equipped with two 300 horse power, six cylinder, oil burning motors, which drive her, under power alone at the rate of five knots. These motors are clearly shown in the photographs above, as are also the pressure tanks for the air starting and reversing system.





A 12-foot, stepless hydroplane, built by the Bath Marine Construction Co. and equipped with a 40-60 h.p. Elbridge, that has done in the neighborhood of thirty-five miles per hour.

## A 12-Foot Hydroplane.

A Little "Piano Box" Hydroplane That Has Done in the Neighborhood of 35 Miles per Hour. Extremely Simple in Construction and Provided With an Adjustable After Plane.

THE photograph at the top of the page is of a little 12 x 4 ft. stepless hydroplane with a 40-60 H. P. Elbridge engine installed, which was built by the Bath Marine Construction Co., and has just been tested out. It was the idea of the company in getting this boat out to produce something that could be built cheaply and easily so that an amateur could put it together with little work, or so that it could be sold at a reasonable price. They have not been able to get ac-

curate data on the speed of this boat, but during the short spurts she has made, she flew over the water making probably 35 miles an hour.

This boat is well adapted for use around small lakes, as she is as stable as a church and two or three people can be loaded on her without greatly effecting the speed. There is no bent work in the construction, nor is there a great deal of material in the boat. The plane on the stern of the boat is arranged so

that it can be raised or lowered to find the position for best results as regards trim and smoothing of water in her wake. The little keg on deck was merely tacked to the boat by a piece of light string that would break in case the boat struck a piece of floating debris, and the other end of the coil of line that was fastened to the keg was attached to the main foundation of the boat so that it could be located easily and picked up in case of sinking due to an accident.

## A Wiring Suggestion.

A Single Switch for the Entire Ignition System, That Performs the Functions of Several. Simple and Easily Constructed, It May Be Made at Home at but a Slight Expense.

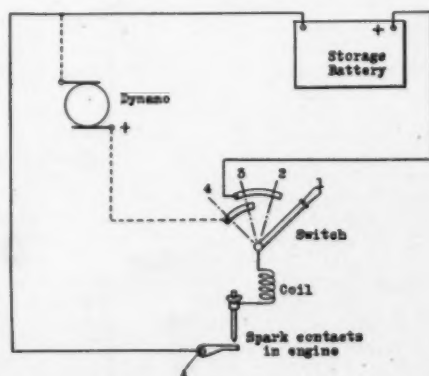
By E. W. Marshall.

WHEN you use a dynamo driven by your engine to charge a storage battery, the electrical connections between the dynamo and the battery must be broken whenever the engine is stopped; otherwise the battery will run itself down through the windings of the dynamo. Several forms of automatic switches have been devised for the purpose of overcoming this difficulty; but all of these are more or less expensive.

In the accompanying diagram a simple arrangement is shown which any motor-boat man may make for himself at little or no expense, by means of which, opening the switch to stop the engine also disconnects the dynamo from the battery. When the switch is in the position shown at 1, everything is disconnected. By moving it to position 2, the battery is connected with the spark contacts so that the engine may be started. After the engine is running the switch may be moved to position 3, when both the battery and the dynamo are connected with the engine so that both of them supply the current for the spark. When the switch is in this position the dynamo will charge the battery. If the battery

is sufficiently charged the switch may be moved over into position 4, in which case the dynamo alone will supply the current for the spark.

Now, to stop the engine, it is only necessary to throw the switch back to its first position.

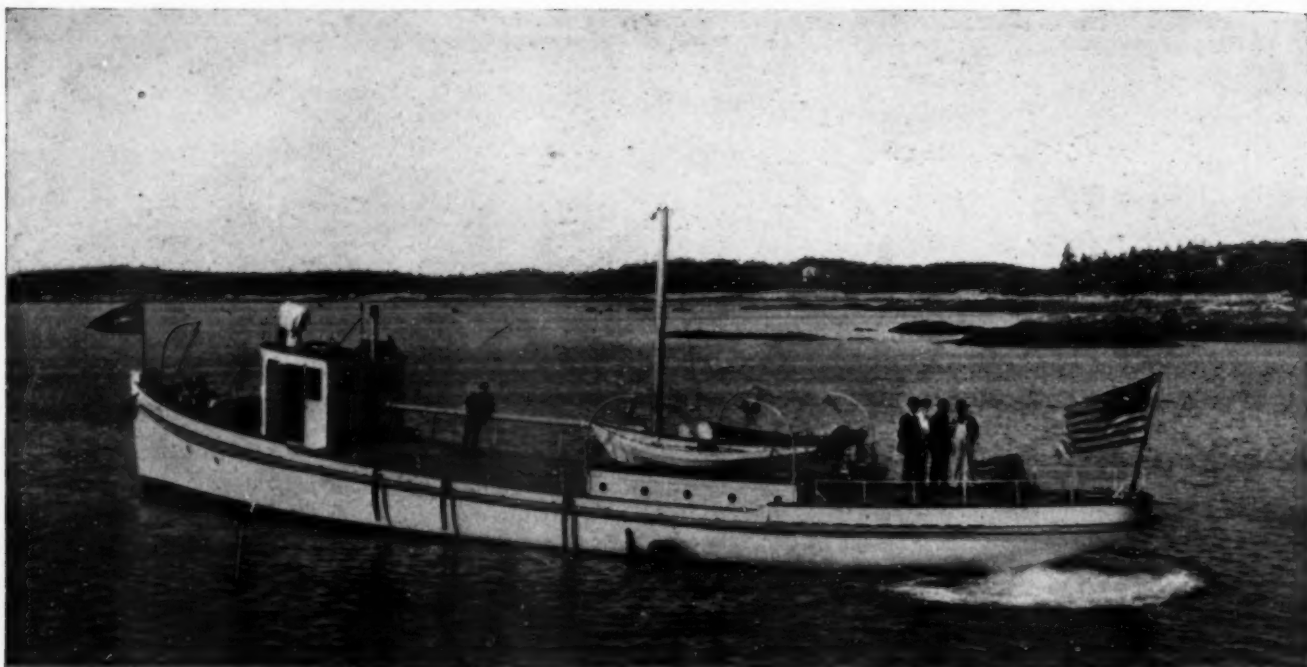


A diagram that explains the working of the switch.

tion which will not only cut off the current supply from the engine, but will also disconnect the dynamo from the battery. The switch may, of course, be placed in any convenient part of the boat.

The sketch shows this arrangement as connected with a make-and-break engine, but it is obvious that it is also applicable to a jump-spark system.

When a make-and-break device is used it is a good plan to tap a hole in the end of the rocker shaft and connect the ground wire directly to it as shown at A. This is because oil is a poor conductor, and there is always oil film between this rocker shaft and its bushing which is sufficient, sometimes, to cause serious trouble. The end of the wire which is connected to the rocker shaft should be wound around into several short convolutions to increase its flexibility. This ground wire may also be connected with the frame of the engine in the usual manner so that if the wire connected with the rocker shaft breaks, the current will still have a path through which it may flow, although this path will be of somewhat higher resistance.



Kingfisher is a 90-footer with a pair of 75 horse power motors that drive her at the rate of 11 knots.

## Why Kingfisher Makes Good.

An Interesting Commercial Motor Boat That Plies Her Trade Along the Coast of Maine.  
Something About Her Duties and Her Remarkably Well Worked Out Equipment.

By Geo. Story Hudson.

**T**HE Queen of Maine's commercial motor boat fleet is the twin screw, 90-foot Kingfisher, with crew of three. Some costly yachts are more painstakingly equipped. Many, it must be admitted, are more carefully groomed, but reward to Kingfisher's owners comes in steady, uninterrupted service—a daily performance that opens wide the eyes of those who would argue in favor of steam.

Kingfisher was designed to go in all weather and she has made good. Her power plant was installed to meet most exacting requirements. Failure on the part of motors, even for a few hours, would mean possible loss of thousands of dollars in damaged cargo and breakdown, also, might imperil lives, for the saucy Kingfisher flirts with submerged ledges and countless uncharted obstructions.

Cutting corners is nothing out of ordinary for this sleek-lined craft, because going across instead of around saves distance, and mileage lessened spells economy in cost of operation. Her keel, therefore, frequently gets on intimate terms with the bottom, as may readily be imagined.

A lovable trait in Kingfisher is her ability to go and return on schedule, clipping hours from time required by other boats less swift and reliable in choppy chances.

This, in many respects remarkable vessel, is owned by the William Underwood Company, of Boston, in connection with their fish packing factories. Her hailing port is Jonesport, Me., but her route covers the length of the Pine Tree State's coast. She visits traps and weirs in all sorts of places—blind holes in the rocks or coves in the islands, going everywhere and anywhere in quest of freight, threading narrow thoroughfares in fog or blinding squalls, visiting cracks in the land that yacht skippers, unless blessed with accurate local knowledge, would shun.

Kingfisher was thoroughly equipped primarily as a business proposition. Expense was not spared in her appointments because the owners demanded the best power installation that money could procure. She was designed by Swasey, Raymond & Page, of Boston.

Her beam is 17 feet and her draft was designed to be exactly 6 feet, and for a reason. The captain had commanded an earlier boat owned by the firm. He was a "six-foot" pilot, so it was decided to have Kingfisher not an inch deeper, as that might interfere with the skipper's peace of mind when getting into close quarters with shoal spots that abound along his run. The bulk of the Kingfisher's displacement is about amidships and the center third of her length is taken up by fish tanks. The bow is sharp, with considerable flare at the deck, while the long overhanging stern was given for the lift and buoyancy it would afford in a following sea.

The carrying capacity of the boat is provided by three holds, of 45, 30 and 15 hogsheads, or tons, respectively. Either loaded or light, as the case may be, the vessel's trim is not affected.

A noticeable feature of the vessel is her low freeboard and absence of high deck structures. The hatches over the tanks are set on low combings and, being located close to the rail, the cargoes can be received from dories or weirs with astonishing ease. The pilot house is carried well forward, leaving just enough room in the bow for handling ground tackle or lines about a wharf. This is a vital point when the use to which such a boat is put, is considered, for the pilot house is the least noisy place on deck and from its windows the captain, during thick weather, can hear the breaking of surf on the beach and so have warning in time to shift his course if running too close to danger. The advantage cannot be overestimated because the man at the wheel depends as much on ears as eyes when picking up channel marks, well inshore.

The power plant, remarkable for its completeness, is installed in duplicate so the boat may be half crippled without suspending daily trips. The 75 h.p. motors, with underwater exhaust, are 4-cycle, 4-cylinder, air-starting, with make-and-break ignition and are of the heavy duty type. Propellers are highly polished and the large bronze shafts are fitted with clutches and planetary reverse.

Nearly all commercial craft, at the time Kingfisher was placed in commission, carried kerosene oil for lanterns. Kerosene, by the way, will quickly ruin a cargo of fish if only a small quantity finds its way into tanks or holds, and many a valuable fare has been thrown away on that account in the older type of craft. F. D. Cleveland, one of the general managers of the company, determined that the Kingfisher should be electrically lighted so as to do away with necessity for any illuminating oils on board. And to Mr. Cleveland, whose ideas are incorporated everywhere throughout Kingfisher, belongs the credit for devising one of the most successful electric lighting plants ever installed on a commercial motor boat.

Two sources of electricity were determined on—first, the regular method by means of a small dynamo and a 10-volt storage battery, the other from an independent 110-volt direct-current taken from a Standard 10 h.p. combined water and air pumping and generator plant. This outfit, by the way, maintains a large air supply constantly on tap for starting the motors. There is, also, abundant air for the whistle without chance of a breakdown.

The auxiliary motor is so arranged that through a small electric motor and a turbine centrifugal pump a three-inch diameter stream of water may be drawn from the bottom of any tank or from the bilge at will of the operator. Besides being a safety measure it preserves the freshness or quality of the cargo, the fish being floated or washed in fresh brine which, on a long run, may be drawn from the bottom of the tanks with accruing sediment and scales, allowing the Kingfisher to land a sweet fare under adverse circumstances. Another pump throws a stream under 60 pounds pressure for fighting fire, washing decks, or other purposes.

A 15-foot derrick mast swings a 30-foot boom for hoisting out of the tanks when discharging fish or for getting cargo aboard. The apparatus is operated by the auxiliary motor, which further does duty in warping or other heavy work.





The name was first lettered on a piece of card board which was then cut out in the form of a stencil; the rest was easy.

## Getting the Boat's Name On.

How the Amateur Who is Not "Handy With the Brush" Can Make a Good Looking Job of It.  
A Paper Guide That Will Ensure Uniformity Where the Name is to be Repeated.

By Stuart Stevens Scott.

**H**AVE you ever wondered whether it would be easier to put the name on your boat with metal letters or to engage a sign painter to do the trick for you?

Of course you have; nearly every boat owner has had this problem before him and few have had the nerve to attempt their own lettering for fear of not being able to make a decent appearing job.

I saw an amateur not long ago who solved the problem in a rather neat manner and I not only watched him but took a couple of

pictures just to show how easy the trick is done, when you know how.

First, he took a piece of rather heavy cardboard and carefully drew out the letters. Then, with a sharp knife he cut out the letters and made a stencil.

This stencil he then tacked on the hull, just where he wanted the name, and, with a pencil, he drew the outlines of the letters.

For his paint he mixed up a special preparation, first making a thick paste of black lead, oil, turps and dryer, and then thinned it out

a little with varnish. This gave him a stiff paint that would not run, and yet was thin enough to permit applying with a pointed lettering brush. Then he took a stick, tied some cotton cloth to the end to prevent marring the white work, and resting his right hand on it he began to fill in the letters.

With the stencil it is possible to cut out fancy letters, or designs, and then be sure that on both sides of the hull the name will appear the same, for only an expert can carry out free-hand designs.

## A Million Dollar Motor Boat.

By William E. Hudson.

**W**HEN you mention "million dollar boats" some one looks wise and says something emphatic. But when the pursuer of the steamer Mackinaw, on her last trip down from Nome last fall, was told that he was to have a million dollar boat as part of his Seattle cargo, he wondered where the joke came in. However, when the "Eagle" came aboard, down on the manifest as "Old Ship's Boat," Capt. E. W. Johnson, Seattle, he saw the joke, for who around Nome had not heard the story of Capt. Johnson's luck?

In the early days of Nome Capt. Johnson was in the tug and lighter business. In the course of time he accumulated a lot of old junk of more or less value. In this collection of stuff was an old ship's boat, 20 feet long and 6 feet beam, and an old gasoline engine. This pair of misfits was put together and called a gasoline launch. At the same time claim No. 3, Copper Gulch, was consid-

ered no good. As a result Krenke and Muller traded their half interest for the misfit launch, that in time was destined to bear the name "Eagle," of Nome. When the boat was

sold it was with a guarantee that it would run, otherwise Capt. Johnson was to pay the sum of \$150 for his interest in the mine. He paid the \$150. As the boat went down in

value the mine came up. All Alaska knows of the fortune that Capt. Johnson made out of No. 3 Copper Gulch, also that the mine is still destined to pay many thousands before being finally worked out.

Last summer Capt. Johnson, touched by the sight of the old "Eagle," rotting on the beach at Nome, gave orders that she be shipped to the States and taken to his beautiful country home at Medina, on Lake Washington, across from Seattle. There she will be placed on a suitable foundation, filled with flowers and covered with ivy. No. 3 Copper Gulch has paid millions and the "Three Star," a beautiful modern cruiser, carries Captain Johnson and his guests between Seattle and Medina.

The photograph shows Eagle on her way home.



In her youth Eagle was a ship's boat.

# The Outboard Motor On a Cruise.

A Portomotor That Played An Important Role On a Cruise Along Lake Superior's North Shore. Carried in a Locker and Used to Convert Either Skiff or Dinghy Into a Power Tender.

By Cameron B. Waterman, Jr.

**H**AVE you ever taken three or four trips to the North Shore of Lake Superior?

That is the same as asking you if you have ever been there at all, for, after one trip, you will not fail to take the others. The coast of Norway is the only place to compare with it for grandeur of scenery and rugged coast line. Every summer for fourteen years I cruised there on a steam yacht, but my last trip, taken on a sixty-foot auxiliary, caps them all. When viewed on the deceptive map of a railroad time table the North Shore of old Superior has the smoothly rounded contour of a griddle cake, but if you will consult a good chart you will at once liken it to a second-hand shredded wheat biscuit or the fringe on "that little old red shawl." It is that fringe that makes it the cruiser's paradise. As you approach the shore you see what appears to be an unbroken wall of cliffs and headlands, but you can choose any of them, sneak up to it under the throttle to dodge the reefs, and nine times out of ten you will find a land-locked harbor hidden behind it.

Reefs! Don't worry about them for in dusty weather you can see and hear the dangerous ones boil, and in clear weather you can see them by their color, even when there is thirty feet of water over them, and you won't need a weedless propeller to get over a reef that is any deeper than that.

Our auxiliary was a floating home, containing all the comforts, except a wife and children. Furthermore, it had no lawn mower to exercise and no furnace with its usual healthy appetite for anthracite. The engine was of the vintage of nineteen three, and it had been on the job ever since, without a single overhauling. Now, don't excite yourself! You can't buy one like it, for the firm that made it failed in 1904—dying for lack of sustenance in the shape of good advertising. This engine was a comfort, but the joy of the cruise was "Coughing Sarah." Sarah was the motive power of our 12-foot rowing tender, her Christian name being Outboard or Portomotor.

We left Detroit and cruised up through Lake Huron, making a bee-line for Superior. It was quite uneventful, and we went on up through beautiful St. Mary's River to the Sault.

From the Sault we made a fine run to Gargantna, one of those hidden harbors, but this one is marked by a small light-house. The light is marked in the Coast Pilot as "White—visible 10 miles." We hunted for it one foggy night, however, and have since changed the description in our Coast Pilot to read, "Visible 10 miles some nights—other nights 27 feet."

When we were tied up for the night and the Captain, by means of a "silver hook" had caught a fresh white fish at the fishing station (a new industry of the harbor), the loyal subject of King Edward insisted that the "Out-

Board" should be taken for an "evening spin to startle the natives," as he expressed it. He had learned from the chart that we were in Canada, and like everyone who hails direct

our English friend had taken off the muffler to "make better time and to make sure that she was firing regularly," as he expressed it. Gargantna Harbor is surrounded by cliffs rising straight from the water's edge, and the echo and re-echo of that fusillade was like nothing so much as a battle in a moving picture show. The "natives" showed distinct signs of interest—not to say excitement.

The next day we went on to Michipicoten Island, and, after several days of excellent fishing, we continued to Spruce Harbor. Our fishing grounds were some four miles from there, with no nearer harbor, so we left the yawl in Spruce and, with the other rowboat towing behind the dinghy, four of us were taken those four miles in 37 minutes. On previous trips I had always rowed those four miles and I know that they are the longest ones on the whole North Shore.

On the trip back towards the Sault, that tender was used again and again, but I will only tell of one of the trips. It was

on the Batchewana Bay, and with the yawl anchored off the fishing station wharf, we started in a drizzling rain to fish the Carp River, five miles away. The run over was uneventful, but the rain came down in torrents about the middle of the afternoon, and it was nearly 8 o'clock at night when the cook and engineer finished their fishing and reached the tender. It was in a pouring rain and so dark that we had to paddle down the stream rather than start the engine and risk sunken logs, as we could not even see the banks. When we came out into the bay we found a gale blowing right in our faces, and the sea was so heavy we had to wade and fairly carry the boat through the surf across the bar at the river's mouth.

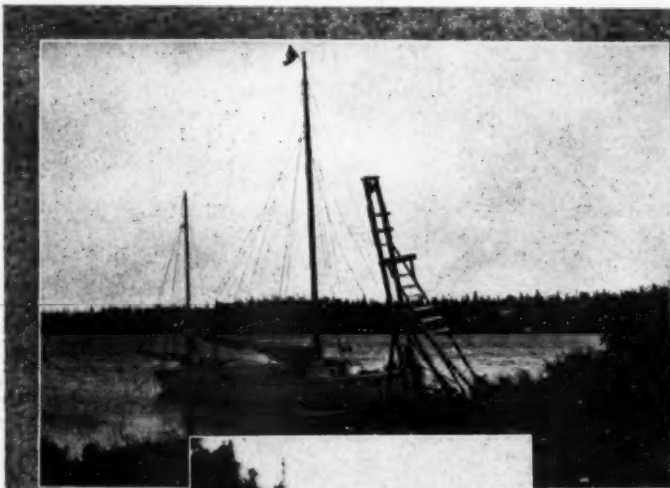
The battery and coil were uncertain as they had been in the rain all day protected only by a slicker thrown over them. Once clear of the bar, however, we uncovered the battery and coil enough to throw in the switch, and we were off at the third turn of the crank.

The engineer sat in the bow with his slicker up around his ears and "made a noise like a spray hood." "Sarah" was no respecter of heavy seas and drove the dinghy into these at full speed.

The cook handled the tiller with one hand, and at intervals when needed kept the bailing dipper busy, as the rain was still coming down in sheets and the spray was going clear over us at every other dive. From the crest of one wave the little 12-footer fairly jumped forward as if trying to reach the crest of the next one without

taking the trouble to go down into the hollow at all.

The five miles were made without a stop and we pulled up alongside the yawl with blessings on the head of "Coughing Sarah" for saving us five miles of rowing in that wind and rain.

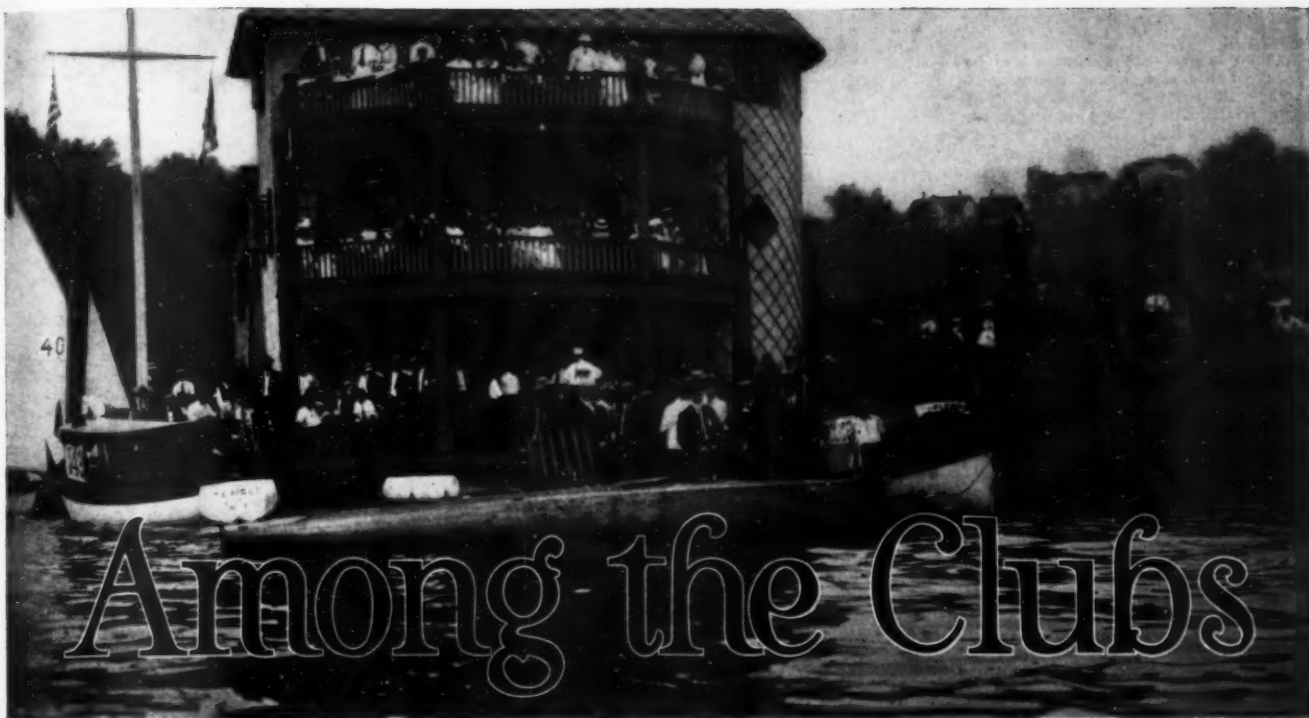


The yawl and her active tender, Coughing Sarah.

from the Island Kingdom, he desired to educate George's provincials.

Back and forth across and around the harbor went the dinghy, doing her full six miles an hour with a full size tidal wave under her blunt bows. Also there was the rattle of nine hundred regular explosions to the minute, for





The house of the Shattemuc Yacht and Canoe Club, Ossining, New York.

**Beach Terrace Yacht Club, Bristol, R. I.** In this town, that has been the birthplace of more cup defenders than any other in the land, the sport of yacht racing has taken on a big boom this season and preparations are under way for the construction and launching of a number of new craft. The formation of the new Beach Terrace Yacht Club, at the northern end of the town, has had a good deal to do with the revival of interest in the sport. The following officers have been elected to direct affairs of the new organization during the year: Commodore, Richard W. Smith; secretary, William F. Huntley; treasurer, William H. Skeel; house committee, Theodore Droz, George Whaley and Herbert Freese; directors, the officers and house committee together with Lloyd C. Wilbur, William M. Birtwell and Walter B. Swanson. The club's new house on a commanding site overlooking part of Narragansett Bay is nearly ready for its house warming.

**Portland Power Boat Association, Portland, Me.** Work on the new clubhouse of the Portland Power Boat Association on Holyoke's Wharf, has been carried forward as rapidly as possible and the building is now about ready for occupancy. The clubhouse is one of the most attractive on the coast. The balcony or veranda on the second floor offers an excellent view of the harbor, and the entire roof with railing round it, will be used for a promenade. One large landing float will be placed at the front of the wharf, with another float on one side of the pier. The floats will be padded so that boats may make landings without danger of being damaged, and a large gangway will lead from them to the door on the first floor of the clubhouse. The interior of the building will contain lockers for members, assembly room, card room, ladies' parlor, kitchen, dining room and dressing rooms.

**Byram River Yacht Club, Port Chester, N. Y.** The Byram River Yacht Club has voted three cups, to be known as the Officers' Cup, the Trustees' Cup and the Club Cup, for motor boat races during the coming summer and has referred the planning of the details of the races to the Regatta Committee. Several members have announced their intention of presenting prizes in addition to these. The club also has voted to offer the Sheldrake Cup, which it won last year, for annual competitions with the Sheldrake Yacht Club of Mamaroneck. The officers of the club for the coming season are: Joseph T. Hubbard, commodore; Clifford Flint, vice-commodore; James H. Fletcher, rear commodore; Harry J. Roundy, fleet captain; Carl Roundy, secretary, and John J. Lewin, M. D., fleet surgeon.

**Brooklyn Yacht Club, Bensonhurst, Brooklyn, N. Y.** Chairman Bentley of the regatta committee of the Brooklyn Yacht Club has made the following announcement about the Reciprocity Race for motor boats from Graves-

end Bay to Halifax, for which Commodore Hearst has offered the prize: "The Brooklyn Yacht Club contemplates holding a gasoline power boat race from its clubhouse to Halifax, N. S. (distance about 600 miles), on July 22, 1911, provided there are sufficient entries. Boats measuring between 45 and 80 ft. over-all measurement, will be eligible to start. If there are sufficient entries the starters will be divided into two classes. Boats measuring between 45 and 60 ft. over-all measurement will race in one class and between 60 and 80 ft. over-all measurement in another class. If there are less than four starters in each division, all boats will race in one class. The course will either be direct to Halifax (outside) or else through Long Island Sound to Provincetown, Mass., where a stop will be made of sufficient time for boats to take on gasoline and stores and thence proceed to Halifax. Valuable prizes to be donated by Commodore William Randolph Hearst will be offered. There will be offered a first prize consisting of a valuable trophy in each class, and a cash prize of \$1,000 to the winner. If there are five starters which finish there will be a second prize, and for seven or more starters finishing, a third prize. Each boat starting and finishing will receive a handsome prize for having completed the course. The regatta committee will be glad to receive suggestions or any questions pertaining to the race, and will give such suggestions its best consideration. As this race will probably be one long to be remembered, and the committee already has assurance of a large number of entries, it urgently requests replies and entries as early as possible."

**The National Association of Engine & Boat Mfrs., New York.** Several important announcements were made recently at the seventh annual meeting of the National Association of Engine and Boat Manufacturers. The annual national motor boat carnival will be held under the auspices of the National Association in conjunction with the Motor Boat Club of America, at Huntington Bay, L. I., during the week commencing Labor Day, September 4th, and ending September 9th. This carnival is the most important affair of its kind held during the summer, and assurances have already been received of the entries of the fastest boats of the East and West. During the carnival long-distance races for boats of all classes will be run, and there will also be class races during three days of the carnival for the perpetual trophies donated by the National Association. In order to increase the interest in motor boating, it was decided to hold the National Motor Boat Carnival in 1913, at Put-in-Bay, Lake Erie, in connection with the centennial of Commodore Perry's memorable victory.

**The Maryland Motor Boat Club, Baltimore, Md.** The racing program is now rapidly being completed by the racing board of the

Maryland Motor Boat Club for the coming season. Among the many races of importance, not only locally, but of national interest, is a cruiser race from Baltimore to Norfolk, a distance of about 187 miles, to take place some time in June or July. Regulations will prevent the entry of any boat which, in the opinion of the members of the racing board, is not sufficiently seaworthy, not properly equipped or not manned with sufficient or competent crew, thus insuring the safety and comfort of those participating. The race will be open to all who choose to enter and are qualified in accordance with the rules, to be published at a later date. As the Baltimore-Norfolk race is the first long-distance motor-boat event to take place under the management of a local club, it will give the amateur navigators of the Chesapeake a fine test of seamanship. The event has created great enthusiasm among the various motor-boat owners of large and small craft on the Chesapeake Bay, and also along the water's edge south of Philadelphia. There are already many boat owners on the Patapsco River who have signified their intention of entering, and others are steadily registering.

**New York Motor Boat Club, New York City,** announce the following calendar for 1911: May 28th, going into commission day; 3 P. M., relay races, 8 P. M., Lantern Hunt; June 11, 3 P. M., Sealed Order races; June 18, 11 A. M., "Tarrytown Light" race, June 24, 4 P. M., club races for cruisers; July 1, 6 P. M., "Albany race," open; July 8, 4 P. M., club races for open boats; July 22, 4 P. M., club races for cruisers; August 4, 10 A. M., "New York to Camden, N. J., race," open, 225 miles; August 5, 4 P. M., club races for open boats; August 19, 4 P. M., club races for cruisers; September 2, 4 P. M., club races for open boats; September 4, Hudson River Yacht Racing Association Regatta at Yonkers, open to boats of the New York Motor Boat Club; September 17, 3 P. M., economy race, September 24, 11 A. M., "Rockland Light" race; October—going out of commission carnival.

**The Taunton Yacht Club, Taunton, Mass.** The following is a list of the officials of the Taunton Yacht Club for 1911: Commodore, Joseph S. Williams; vice-commodore, Lewis M. Witherell; rear commodore, Samuel G. Wilkes; secretary, Alton H. Ryder; treasurer, Frederick E. Goff; fleet captain, Lester O. Thomas; fleet surgeon, Dr. Ralph D. Dean; all of Taunton, Mass. The club anchorage and station is at Dighton, Mass.

**The Tappan Zee Yacht Club, Grand-View-on-the-Hudson, N. Y.** This club has just purchased property 150 feet south of the present club house, on which a larger club house will be built. The club will have its own marine railways, and will also have 120 feet of water front, with ample room for winter storage. A marked interest in the club has been shown, evidenced by a decided in-

crease in membership during the winter, and a much larger fleet of boats will be seen in front of the club house this summer. The club will also have additional private moorings, which will be kept especially for the use of visiting clubs. The season's racing schedule will open Decoration Day, May 30th, and there will be sail and motor boat races every Saturday, including three open sail and motor boat regattas.

**The Kalkaska Yacht Club, Kalkaska, Mich.,** was organized a short time ago, and the following officers elected for 1911: Commodore, J. L. Boyd; vice-commodore, James Greacen; rear commodore, Edgar B. Babcock; secretary, P. W. Pearsall; treasurer, Amos G. Beebe; fleet captain, B. McDermand; trustees for two years, James Hammond and William E. Chaney; for one year, William Lewis and George F. Bow; delegates to the Lake Michigan Yachting Association, L. H. Noyd and Dr. P. W. Pearsall. Torch Lake, on which the fleet is located, is one of the beautiful lakes in which Northern Michigan abounds. It is 18 miles long and 3 wide, and its shores along their whole length are dotted with summer homes and cottages. The annual cruise will be held in August.

**Flushing Bay Motor Boat Club, Flushing, Bay, L. I.,** has been organized and the following officers have been elected: H. Kullies, commodore; M. Heinel, vice-commodore; B. Hupe, rear commodore; H. Raube, financial secretary; W. Fuller, recording secretary; J. McCarthy, fleet captain; E. Bottke, treasurer; measurers, C. Weiland, H. Hupe, C. Schwartz. The club has seventy members and has made application for charter. The club house and anchorage is at North Beach, Flushing Bay, L. I.

**Mosquito Fleet Yacht Club, Boston, Mass.** This club has organized for the year with the following officers and standing committee: Commodore, Thomas J. Kelly; vice-commodore, David D. Henwood; fleet captain, Anthony H. Williams; secretary, Richard S. Landers; treasurer, Cornelius J. Driscoll; measurer, Edward T. Landers; directors: James H. White, Sidney C. Higgins, Richard H. Quirk; house committee: W. H. McGowan, Thomas Walsh, Edward Morrissey, Rudolph Bergdoll, Edward Hopkins; membership committee: Walter Craft, Ivan Horton, John Toland, Robert Kershaw, Charles Lord; regatta committee: Dr. F. X. Crawford, Frank Bond, John McAuliffe, William Glancy, Dr. A. T. Dalrymple.

**The Delaware River Club, Torresdale, Pa.,** announce the following calendar of activities for the 1911 season: May 6, opening day; May 13, race for Governor's Cup and special

prize by W. Y. Stevenson; May 27, class race; May 30, Decoration Day, dinner and dance; June 10, race for Governor's Cup; June 24, class race; July 4, special motor boat race, canoe and swimming races; July 15, race for Governor's Cup; July 29, class race; August 12, open race, Championship of the Upper Delaware; August 26, race for Governor's Cup; September 9, class race; September 23, race for Governor's Cup.

**The Royal Kennebecasis Yacht Club, St. John, N. B.,** announces the following calendar of motor boating events for this season: May 24, Squadron cruise; May 22 (Coronation Day), motor boats under 24 feet L. W. L., motor boats 24 feet L. W. L. and over, and cabin cruisers; May 24, annual race for Trask Cup, open to all motor boats in the Maritime Provinces; July 1 (Dominion Day) squadron cruise and long distance race to Upper Jemseg, about 55 miles; July 8-16, annual cruise; July 29, endurance race St. John, N. B., to Digby, N. S., crossing Bay of Fundy; September 2, squadron cruise. At the recent annual meeting the following officers were elected for the ensuing year: Robert Thomson, commodore; J. Gordon Likely, vice-commodore; A. Ernest Everett, rear commodore; Harold W. Stubbs, secretary, and Henry B. Robinson, treasurer. Executive committee: The flag officers, secretary and treasurer (ex-officio), and Fred. S. Heans, C. B. Allan, Horace King, W. C. Rothwell, and H. S. Keith.

**Western Power Boat Association, Thomas H. Webb, racing manager,** announces that the date of the Association's Third Annual Regatta at Peoria has been changed from August 8th and 9th to July 25th and 26th. This change makes possible the entry of several representative Eastern craft in the regatta.

**A Gasoline Flag.** At a recent meeting of the American Power Boat Association, the matter of a distinguishing flag to be used in connection with gasoline supply stations was brought up. It was suggested that a rectangular white flag with a black cross, the arms running vertically and horizontally, would be readily distinguished against almost any background, and that this design be recommended by the association and everyone interested in motor boating, for adoption by those in charge of gasoline supply stations. Such stations are often located in places not easily discernible from passing craft. A recognized distinguishing flag would bring business to fuel dealers and would be a great convenience to motorboat men. It would seem that it might also come to be used like the present water flag, to call attention to the fact that the boat flying it was in need of fuel.

**Portsmouth Boat Club, Portsmouth, Va.** At the recent annual meeting of this club the following officers were unanimously re-elected for the year 1911: President, Milo M. Dodd; vice-president, Frank H. Dewey; secretary and treasurer, T. A. B. Hall; directors to hold office for two years: M. B. Langhorne, J. D. Wood, George H. Bacot, and E. W. Pritchett. If the tentative plans adopted at the annual meeting are rounded out into completion, the motor boat enthusiasts will enjoy a cruise in the waters of North Carolina, visiting numerous summer resorts. The annual regatta will probably be held in May.

**City Island Yacht Club, City Island, N. Y.** The schedule of the club, which has been definitely made up, includes the following events: May 20, going into commission day; June 4, speed boat race for the Madeline Trophy, open; July 4, open race for the Kirchhof Trophy for boats under 30 feet with less than 25 H. P.; July 4, club race for speed boats; July 4, club motor boat race, closed; Sept 2-4, club cruise, rendezvous off the City Island Yacht Club. All motor boat races will be run under the A. P. B. A. rules. All entries must be made no later than 24 hours before the race and all protests must be made in writing no later than 24 hours after the race.

**The West End Yacht Club, 163rd Street and Hudson River, New York City,** held its annual meeting April 2, and elected the following officers: Commodore, E. R. Mason; vice-commodore, Adam Marshall; rear-commodore, William Dorr; treasurer, H. S. Kramer; secretary, James M. Kirshner; fleet captain, Joseph Avar; measurer, B. E. Sherman; fleet surgeon, Dr. Edward F. Kilbane, and steward, George Deckelmeyer.

**Interlake Yachting Association.** The motor boat committee of the I. L. Y. A. has announced that prizes aggregating \$1,500 will be offered for three motor boat races during the Interlake meet to be held at Put-in-Bay, Lake Erie, July 18 and 19.

**Maumee River Yacht Club, Toledo, Ohio.** The club recently moved into its new home and its 352 members express the greatest satisfaction with their new quarters, near Walbridge Park. The building is complete in every detail, with library, dressing-rooms, ballroom, pool-room and shower baths, dining-room and kitchen. A practical feature is a large workroom well stocked with tools of all descriptions.

**Waterway League of New Jersey.** Members of the Waterway League of New Jersey will cruise in squadron to Jamaica Bay on June 17th and 18th, to forgather with their allies of the Waterway League of Greater New York and Long Island.



**Bermuda Race: June 17th, 2 p. m.** This race will start from the flagship of the Motor Boat Club of America, which will be anchored in Gravesend Bay, New York City, and the finish will be off St. David's Head, Bermuda.

**Albany-New York Race: July 1st.** The annual race of the New York Motor Boat Club will start at 6 p. m. and is open to all motor craft, except automobile boats, less than 40 feet over all. Entries close June 28th.

**New England Engine & Boat Association: July 4th.** Fifth annual open motor boat race for the championship of New England, held off the club house in Boston Harbor.

**Dubuque, Iowa: July 4th, 5th and 6th.** Annual regatta. Prizes aggregate \$5,000.

**Yachtsmen's Club Ocean Race: July 8th.** This race will start from a point near At-

lantic City, and will go to Scotland Lightship, thence to Fire Island Lightship, and return. Held under the auspices of the Yachtsmen's Club of Philadelphia.

**Marblehead Race: July 14.** Starts from Huntington Harbor, Long Island. Held by the Motor Boat Club of America.

**Mackinac Island Cruise: July 22nd.** Cruising race held by the Chicago Yacht Club.

**Halifax Race: July 22nd.** Start of Reciprocity Race from New York to Halifax, conducted by the Brooklyn Yacht Club for the William Randolph Hearst Trophy.

**Western Power Boat Association: July 25th and 26th.** The third annual regatta of this association will be held at Peoria, Ill.

**New York to Camden: August 4th.** This race will start from the club house of the New York Motor Boat Club and will finish off the club house of the Camden (N. J.) Motor Boat Club.

**Scripps Cruise: August 7th to 14th.** This race will start from Detroit and will finish at Buffalo, held under the auspices of the Great Lakes Power Boat League. Distance, about 600 miles. Open to power boats not under 30 feet in length.

**Gold Cup Races: August 8th, 9th and 10th.** American Power Boat Association races held at Frontenac on the St. Lawrence River.

**British International Races: August 24th, 25th and 26th.** These races will be held in Huntington Harbor, Long Island Sound, for the Harmsworth Trophy, successfully defended last year by Dixie III.

**National Association of Engine & Boat Manufacturers: September 4th to 9th.** Annual national motor boat carnival held in conjunction with the Motor Boat Club of America, at Huntington Bay, Long Island.



# From Motor Boating Readers.

A Department for the Exchange of Ideas and the Discussion of Questions of General Interest.  
Editorial Opinion on a Number of Questions Submitted by Readers of the Magazine.

*MoToR Boating's columns are open to its readers, not only for asking questions, but for placing before other readers ideas, results of experience, opinions, etc., that should be interesting or helpful to them; but the editor will not, of course, be responsible for any opinions expressed or statements made in such communications. The name and address of the writer must necessarily be given in every case to make an answer by mail possible (no anonymous contributions will be considered for publication), but names will be omitted in publishing the letter and answer where desired, in which case it is desirable that initials or other distinguishing signature be appended. Through the correspondence department readers of the magazine may be of direct aid to one another in solving the problems of motor boating.*

## Waterproofing Canvas.

To the Editor of Motor Boating, Sir:—

Will you kindly give me the formula of some inexpensive preparation for waterproofing canvas, such as boat covers, spray hoods, etc.

This will probably be of interest to boatmen who are putting off their winter covers and getting out the summer ones, and as either raw or boiled oil is expensive stuff to use for this purpose, I thought it possible that you could suggest some substitute that would not make the canvas too stiff. ROBERT BIRCH, Brooklyn, N. Y.

Although there are a number of preparations on the market for water-proofing canvas, the following are two simple and inexpensive methods for accomplishing this result without affecting the pliability of the cloth. In the first place it may be steeped in a decoction of 1 pound of oak bark and 14 pounds of boiling water. This quantity is sufficient for 8 yards of canvas, and the cloth should be allowed to soak for 24 hours. After this it should be taken out, passed through running water and hung up to dry. Flax or hemp fibers in absorbing the tannin are not only made impervious to moisture but are at the same time better able to resist wear and tear.

Another formula which is highly recommended by some and which is used extensively for coating wagon tops, tents, awnings, etc., and which, it is claimed, will prevent the cloth

from becoming stiff, is as follows: dissolve soft soap in hot water and add a solution of iron sulphate. The sulphuric acid combines with the potash of the soap and the iron oxide is precipitated with the fatty acid as insoluble iron soap. When this has been washed and dried mix with linseed oil and apply. The soap prevents the cloth from becoming hard and cracking without affecting its ability to resist the effect of water.



Gray XII is a popular little boat on the Niagara River around Buffalo. She is a 21-footer, owned by Arthur E. Bennett, and is equipped with a 21 h.p. Gray, which gives her a speed of 20 miles.

## The Size of the Burgee.

To the Editor of Motor Boating, Sir:—

Will you kindly give me the proper length for the private signal flag for a 30 ft. raised deck cruiser, also proper length for a burgee for same length of boat.

ALEX. FISHER, Detroit, Mich.

A good rule to follow for both the burgee and private flag is to make the hoist (vertical dimension)  $\frac{1}{2}$  inch for every foot of the boat's

length and the fly (horizontal dimension)  $1\frac{1}{2}$  times the hoist. Your flag would therefore be  $15 \times 22\frac{1}{2}$  inches.

## Position of the Carbureter.

To the Editor of Motor Boating, Sir:—

This season I intend moving my engine farther forward, but by doing so it will be impossible to keep the carbureter at its present relative height with the gasoline tank. I am planning, therefore, to drop the carbureter three or four inches, and I am writing to ask whether this will, in any way, impair the working of the motor.

A. E. FISHER, Chester, Pa.

We believe that the arrangement you suggest will work perfectly satisfactorily. The additional length of pipe in itself would make absolutely no difference and you would probably experience no difficulty from the elbows, although of course, it is always well to avoid these if possible, as

they tend to precipitate the gasoline that is not vaporized.

A great part of the fuel is necessarily precipitated on the walls of the pipe or manifold, and once there it stays there, being drawn along by the inrushing air. The more fuel precipitated on the walls the harder is the problem of securing proper distribution to the various cylinders, and it is well, therefore, to avoid elbows and rough surfaces for this reason as well as from the friction they offer to the passage of air.



Mascot II at full speed. She is owned by R. E. Thomas of the Morristown Motor Boat Club.

## Regarding the Magneto.

To the Editor of Motor Boating, Sir:

I am an ardent admirer of *MoToR Boat-ing*, and was especially interested in "How a Magneto Makes Electricity," which appeared in the January and February numbers. However, the author's explanation of the production of current in type D (p. 29, Feb. issue) was not quite satisfactory to me, and I deem the matter of sufficient interest and importance to submit the following explanation:

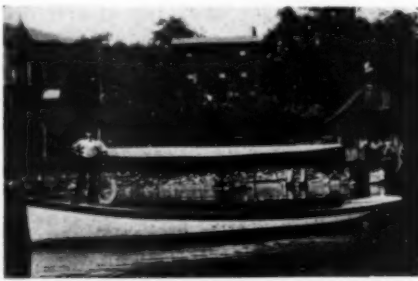
The interrupter of the instrument acts as the timer, by interrupting or breaking the circuit of the primary winding of the armature. At the instant of interruption of the flow of current, then the primary circuit, a current of high voltage, is induced in the secondary winding of the armature in exactly the same manner as in an ordinary spark coil; but, owing to the rotation of both primary and secondary windings of the armature, there is a peculiar combination of inductive and generative effects. The inductive effect produced by the interruption of the primary circuit lasts an infinitely small period of time, and if not reinforced by the generative effect of the rotating armature, the spark produced by the inductive effect would consist of a single flash lasting no appreciable time across the points of the spark plug.

However, owing to the generative effect of the secondary winding, on the armature rotating in the magnetic field, a current of not so high voltage as that induced by the breaking of the primary circuit is generated. This generated current while being of very much higher voltage than that generated in the primary winding, is not sufficient to break down the resistance of the gap in the spark plug; but, at the instant the primary circuit is interrupted, and the high-tension current is induced in the secondary winding, the spark produced is of sufficient voltage to break down the resistance of the spark plug. Then, the somewhat lower voltage of the generated current (produced by the rotating secondary winding of the armature) is able to cross the gap, the resistance of which has been broken down by the discharge of the induced current. The result of this combination of inductive and generative effect is seen in the peculiar flame-like spark produced by the machine and this spark is not an instantaneous flash, but a flame lasting for an appreciable angle of the armature rotation.

E. P. CULVER,  
Hudson Falls, N. Y.

Without wishing to appear at all dogmatic, we would say at the outset that your idea is a mistaken one. The induction of current in both the primary and secondary windings of a magneto of this type is due to the variations in magnetic flux through the armature core caused by its rotation within the field of the permanent magnets. The current flowing in the secondary winding is in no sense dependant upon that in the primary winding. They are absolutely independent of each other and are induced simultaneously by the same force. The spark is caused to pass only when, through action of the circuit breaker, which as you say acts as a timer, the induced current in the heavier primary winding is impressed upon that already induced in the secondary. The peculiarly flaming appearance of the spark from such a magneto and its ability to burn away the spark points at the plug are due to the relatively very much higher amperage of the current induced in the primary winding.

As you know, the greater the number of turns of wire included in a field, the higher will be the voltage of the induced current; but also the heavier the wire the higher will be the amperage of that current. You have undoubtedly experienced a human being's ability to sustain electric discharges of enormously high voltage from an electro-static machine. These discharges are in a general way of much higher voltage than is ever used for motor ignition, but the smallness of their effect and their inability to burn is due to the negligible amperage. This explains the flaming appearance of the spark. But you are again wrong when you state that the spark lasts through an appreciable arc of rotation of the magneto arma-



Jessie, a 25-footer owned by E. M. Keller, of Guttenberg, N. J., is the winner of seven cups on the Hudson River.

ture. Apparatus designed for the purpose of determining the degree of synchronism clearly shows this. Such a spark really appears to last for a considerable time, but that is merely an optical effect and is due to the lag in the change of impressions upon the retinae of one's eyes. In conclusion, we would say that the high tension current is not induced in the secondary upon breaking of the primary, since of course, the break in the primary circuit has absolutely nothing to do with removal of the lines of force from the region occupied by the secondary winding. You cannot but see that the magnetic flux through the windings is controlled wholly by the mechanical motion of the armature and by nothing else. It is the impressment of one induced current upon the other, suddenly, by the breaking of the pri-

port, and that is why more pleasure is often had in a one-man open launch than in a steam yacht with a retinue of brass buttons within beckoning range.

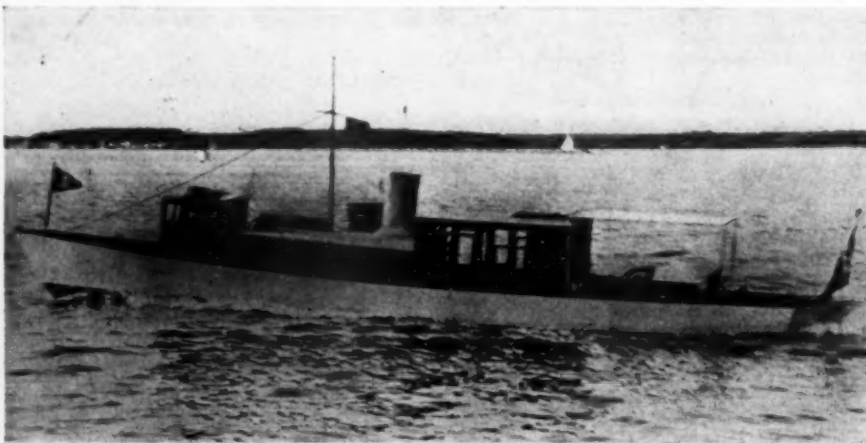
There are numerous boat builders and marine machinists, of course, to whom you may entrust your boat with perfect confidence. The "trouble men" at the works of any gasoline engine company are men who know their business thoroughly and well. But with the coming of the gasoline launch in such enormous quantities there have, unfortunately, come also an army of unscrupulous or incompetent posers as repairmen, who infest our harbors in summer and who prey upon the visiting yachtsman or the unsophisticated tenderfeet of the same port, who, with trusting, pleading, anxious faces beg them to "make her go." There are two kinds of these harpies: the bluffer, and the extortioner. The first may be a good poker player, but knows nothing about scientific boat or engine repairing, and is absolutely incompetent except to patch or cover up. The second is harder to deal with because he is not incompetent, but can probably do the work as well as anybody. He is the kind who looks you over with a fatherly air, when you ask timidly for an estimate of the cost, and says, "I always charge what is reasonable, and serve my customers well." Whereat you retire in deep humility before the most colossal Ananias of the age. The only way to deal with the members of this class is to be inflexible and insist on knowing in advance what your bill will be. Also, always furnish the supplies and accessories yourself.

One concrete example of bitter experiences I have undergone in the past with both of these classes may teach a lesson to others as well as to myself. There is no sense nowadays in cruising in company with barnacles. And there is nothing much more important for the long life of your boat than keeping clear of them. A bottom treated with two or three coats of the best copper, correctly applied, is sufficient insurance against fouling for a considerable length of time. But being in a distant city at the time of fitting out last spring I had the work done by a janitor who knew, and probably still knows, as much about boat painting as about portrait painting. Hence, in a very short time the good ship looked like a whaler just in from a three years' voyage to the South Atlantic.

The members of the second fraternity as a rule only work when the spirit moves them and the fish are not biting. One morning in midsummer I made preliminary preparations to start my engine, but found her very refractory, and a hasty inspection indicated something serious. Not having time to go over her thoroughly, I left her with a repairman who promised to have her in fine shape inside a week. Two weeks later at an hour near midnight he pronounced her ready, and we began what

was intended to be a week's cruise, but which proved to be only a few hours' run. I then got down to the vitals of the engine and found a watery cylinder. The repairman had charged me an absurd sum, and had done nothing, as far as I could make out, except rewire her, scrape a little carbon off the cylinder and attempt to plug a puncture in the casting, then sending me out into open water with a leaky circulation! A new cylinder head from the makers, which cost less than half what the repairman's charge had been, of course did the business.

BRADFORD BURNHAM, New York City.



Venture II is a 60-footer owned by Artemus Ward of New York City. She was designed by Swasey, Raymond & Page of Boston, and is equipped with a six-cylinder, 60 h.p. Lamb, that gives her a speed of twelve knots.

mary circuit, that caused the current to jump its gap.

## Incompetent Repairmen.

To the Editor of Motor Boating, Sir:

A solid golden rule for the motorboatman to follow is to do all possible work in the way of fitting out and repairs himself; or if limited time or inexperience prevent this, to have it done at a yard or shop of well-known good standard and well-established responsibility. A great many of us find that half the fun of owning a boat lies in working on her when in



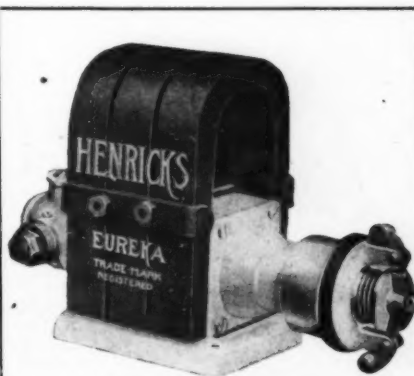
# New Things for Motor Boatmen.

New Attachments and Accessories That Are Offered to the Man With a Boat.  
The Month's Production of Devices Designed as Aids to Motor Boating.

[Under this heading will appear each month descriptions and, whenever possible, illustrations of the various devices designed to add to the pleasure and comfort of motor boating which have been brought out since the previous issue. It should be kept in mind that the department in any one issue is, as it were, only one month's instalment of the many useful things on the market, and that it will be well to consult the previous issues of MOTOR BOATING which will form, together, a very complete illustrated directory of the things the motor boatman needs. —In writing the makers of the articles shown, if our readers will mention MOTOR BOATING they will receive special attention.]

## Henricks Magneto.

Henricks Novelty Co., 314 West Georgia St., Indianapolis, Ind. Shown on this page is the "Eureka, D. C.," magneto, which is designed to furnish, in addition to the necessary ignition current, sufficient current to light from two to five lights. This magneto is made also in a different style of winding for lights only, but either type is intended especially for motor cars or motor boats which have no provision for a magneto. The instrument may be driven either by a belt or by friction from the flywheel. The outside dimensions of this magneto are 10 inches over all, 4 1/2 inches wide and 7 5/8 inches high. The total weight is 23 3/4 pounds. The machine is equipped with a patented ball bearing belt governor, which regulates the speed of the magneto regardless of the speed of the motor, thereby preventing burning out of the spark coil or contact points through an excessive amount of current. Any motor boat can be equipped with one of these magnetos.



The Henricks Magneto.

## Seely Motor Controls.

J. A. Seely Mfg. Co., Ogdensburg, N. Y. Two new types of motor controls have just been brought out by this concern, and the auto control steerer shown upon this page will, in particular, be interesting to motor boatmen who have had trouble in fitting their motors with the usual automobile type of control. This device is equipped with a fore and aft motion of the control fingers, which enables them to be used upon any make of motor regardless of the arrangement of the spark and throttle levers. The independent bulkhead control also illustrated is of a new type and is intended especially for smaller boats and those which are steered by wheels of a different type. The rods may be made of any specified length and the springs shown at the bottom effectively hold either lever in any desired position.



The Seely Auto Control

## Marblehead Anti-Fouling Green.

Stearns & McKay Co., Marblehead, Mass. There is nothing more important in the care of a well-kept yacht than the protective composition used on the underbody below the waterline, and for this reason Marblehead Anti-Fouling Green Bottom Composition has come to be recognized as a powerful anti-fouler and an effective protection to the yacht's bottom against marine growth of any kind. Its curious slippery qualities in salt water have a unique characteristic and render it valuable for racing yachts. It is used to a large extent in Florida waters, the Gulf of Mexico, and in Pacific and African waters, on account of the protection it affords against teredos. The composition is a handsome shade of emerald green and sells for \$1.60 per quart, or \$6 per gallon.

## Henke Perfection Bronze.

Henke Manufacturing Co., 175 Park Row, New York. This is a bronze paint manufactured in two colors, green bronze and copper bronze, and is designed to prevent the accumulation of barnacles or marine growth upon the bottoms of boats. It is put up in a patented can, especially invented for this paint, which keeps the liquid and the bronze separated until the can is opened and the boat ready for painting. Being mixed while using, the paint is elastic and easy to apply, and dries almost at once so that a second coat can be applied immediately. It has remarkable covering properties and possesses sufficient body to be easily applied. The use of this paint is said to insure a boat absolutely against marine growth of any kind during the entire season.

## B & W Rubberized Rain-coats.

Brown & Williams Co., 253 Broadway, New York City. The line of coats manufactured by this concern omit, for the 1911 season, all fads and fanciful styles which were at one time in demand, and concentrate upon just five numbers. These five styles are designed particularly to give the motor boatman a good serviceable coat, handsome and stylish by reason of its simplicity, and at a moderate price. The garments are made in tan or olive shade, for men or women, and are fitted with a military storm collar fastening high around the neck. The "Presto" collar, which can be changed at will from the military to the walking style, is furnished at an extra charge of 75 cents per garment. They range in price from \$4.75 upwards, according to the quality and design.

## Perfect Spark Plug.

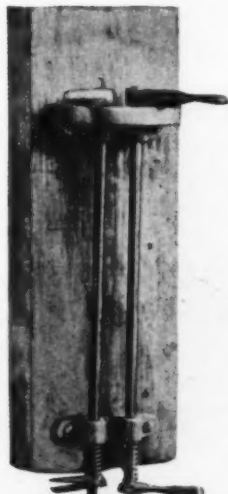
Perfect Spark Plug Co., 454 Driggs Ave., Brooklyn, N. Y. This plug has just been invented by Wm. H. McNutt and embodies the same principles as those used in most of the inventor's non-explosive devices for cans, tanks, etc. This new spark plug is provided with a finely perforated covering to protect the interior and the porcelain from flame and oil. This covering is made from a specially prepared heat resisting composition metal that is said to equal platinum as far as durability is concerned. This new invention is covered by Patent 975056 and is protected by a number of very strong claims.

## "Neverfurl" Flag Staff.

The Novelty Mfg. Co., Waterbury, Conn. This flagstaff is made for either the bow or the stern of a boat and is so constructed, as shown in the illustration, that the flag is always unfurled and cannot become tangled, no matter how varied the breeze. The staff is made of solid brass so that it cannot rust and the flag is easily removed when desired. It is not necessary to remove the flag when returning from a sail, since the entire staff can be easily taken out of the socket with the flag attached. The socket is made with a bayonet lock.

## Triplex Facilitator.

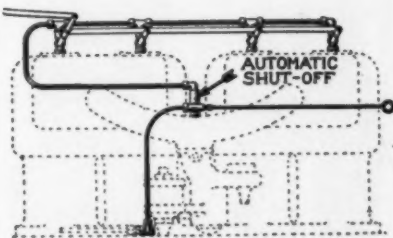
A. M. Walstrom, 854 Security Bank Bldg., Minneapolis, Minn. This is a recently patented device which makes motor starting easy by combining the compression release and priming operation. This is accomplished by releasing the compression in the cylinder and directing the released air through an atomizing nozzle, into the intake manifold, thereby priming the motor continuously while it is being cranked. The atomizing nozzle is connected with the gasoline supply pipe as shown in the cut, and has a needle valve which, when open, allows the gasoline to enter. Owing to the construction of this nozzle the released air passing through it will atomize the gasoline of even the lowest grade, and the vapor is carried immediately into the cylinder before it has an opportunity to condense. The device is also provided with a valve which closes automatically when an explosion occurs in the cylinders, thus preventing burned gases from entering the intake manifold. It may be easily attached to any motor equipped with relief cocks. A motor fitted with this device may be cranked from the seat by the use of the Pullman starter, which is also manufactured by Mr. Walstrom. The price of the facilitator is \$10 for a one or two-cylinder engine, \$12.50 for a three or four-cylinder, and \$16 for a six-cylinder.



The Seely Bulkhead Control.



The "Neverfurl" Flag Staff.



The Triplex Facilitator.

### Oneita Electric Horn.

Electric Horn and Specialty Co., Utica, N. Y. The Oneita Electric Warning Signal for automobiles and motor boats is of the vibrating type, constructed with a heavy cast brass case, water and dust proof, with all parts protected. The vibrator is placed between the diaphragm and magnets, thereby doing away with the sliding plunger usually found in this type of horn, and an exceedingly deep, penetrating tone is obtained, owing to the peculiar construction employed to hold the diaphragm under tension. The projector is of one piece of heavy gauge brass, spun in casting, not soldered. The Oneita is of pleasing lines, highly finished in brass, nickel or Packard finish, and retails for \$15, complete.

### Dirigo Air Compressor.

Walter Coleman & Sons, Providence, R. I. This air compressor is designed to be connected either by friction or belt to any form of power and to furnish compressed air for the whistle or any other purpose about a boat. It may be placed if desired in the compartment with the motor and driven direct from the fly-wheel by friction. The pump can be easily stopped or started by means of the small lever shown in the illustration. The outfit is constructed of the best grade of materials and all parts are interchangeable, making the apparatus very durable. Metal compression rings are used and a compression of large capacity with a minimum use of power is possible. It requires one-tenth horsepower to operate and has a capacity of 3,000 cubic inches of free air. It is arranged to pump 150 pounds pressure, but may be limited to 60 pounds if desired, and the arrangement is such that the compression cannot pass beyond the safety limit. Each cylinder has a bore of  $1\frac{1}{2}$  inches and a stroke of  $2\frac{1}{8}$  inches. The price with pulley is \$15.

### Hauck Kerosene Torch.

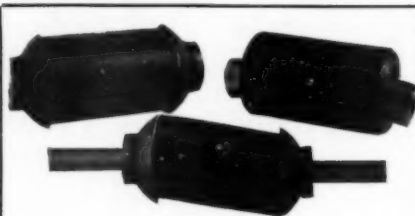
Hauck Manufacturing Co., Richards St. and Hamilton Ave., Brooklyn, N. Y. This torch will be found most useful in making small repairs about the boat in the boathouse since it is adapted for various heating operations, light brazing, tinning, producing an intense, clear flame, etc. The instrument is so constructed that the tank will remain perfectly cool while the burner is being operated, and the valuable feature of the device lies in the fact that kerosene is used as a fuel instead of gasoline. It is stated that the torch will melt a piece of copper measuring  $\frac{1}{2} \times \frac{1}{4}$  inch in three minutes, and a 1-inch brass rod in two minutes. These torches are made regularly in two sizes, selling at \$15 and \$20, although larger sizes can be made if desired.

### Skidoo Soap.

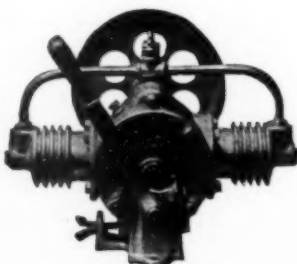
The Yeazell-Goldstein Corporation, Columbus, O. This soap is made from vegetable oils and glycerine and incorporated in it is a mineral which, while it does not scratch or burn the skin, will readily remove dirt and grease. The soap is in the form of a paste and is said also to be most effective in removing spots and stains from rugs and clothing. Skidoo is for sale by grocers, druggists, hardware dealers, etc., and costs 10 cents for a 12-ounce can.

### The Trouble Finder.

Motor Necessities Manufacturing Co., 140 West Federal St., Youngstown, O. This is a simple and convenient spark plug attachment, which will show the location of any trouble with the ignition system, and which will, when desired, cut out any or all cylinders without injuring the secondary insulation of the coils or magneto. The device, as the illustration shows, will fit any spark plug and operates upon the principle of a friction sliding post. When the attachment is raised the plug operates in the usual manner, but when the sliding post is lowered until its end touches the sleeve just below the porcelain the current passes through the trouble finder instead of through the points. By lowering the post to within  $1/16$ -inch of the base of the plug the strength of the spark may be tested and a missing or imperfectly operating cylinder may be easily located. The price of the trouble finders is 50 cents each.



Vaco Flexible Coupling.



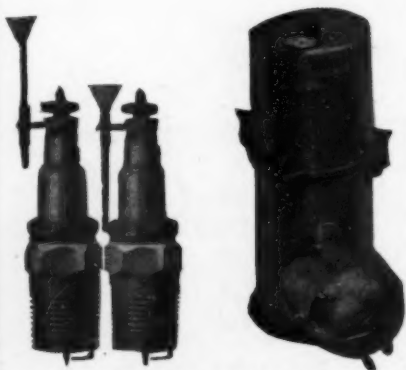
Dirigo Air Compressor.



Bingham Compensating Carburetor.



Hauck Kerosene Torch.



The Trouble Finder. Sun-Lite Generator.

### Vaco Flexible Coupling.

The Victor Appliance Company, Watervliet, N. Y. The flexible coupling shown on this page has just been placed on the market and embodies several new features, the most prominent of which is the absence of bolts or screws, permitting it to be assembled without the use of tools. The adjustment is permanent, although complete disconnection can be made in a moment's time. An ample oil reservoir is provided and the exterior presents a smooth cylindrical surface. As may be noticed from the illustration, the device can be used either as a single or a double universal joint, and the universal flexibility makes it particularly adaptable to motor boat use. The device may be furnished with a spherical dust cap at each end, if desired, and, although a slightly longer operation is required to take this type apart, either may be entirely disconnected without the use of tools. They range in price from \$13.50 to \$22 without the dust caps, and from \$15 to \$25 with dust caps.

### Guaranola.

Guarantee Sales Company, New York City. This is a new lubricant consisting of a heavy paste compound whose base is graphite mixed with other elements, so treated that it remains indefinitely suspended in oils. A small quantity mixed with cylinder oils, is said to have a beneficial effect on cylinder walls, piston rings and bearings, coating them with a lasting film which reduces friction to a minimum and is not affected by high speed, pressure or heat. It is said to gradually fill up any unevenness, scratches or scorings so that it insures higher compression and as a result, more power.

### Bingham Compensating Carburetor.

The Bingham Mfg. Co., 227 Prospect Ave., N. W., Cleveland, O. This carburetor is designed to overcome the difficulty common to many instruments of its kind, which, while they can be easily adjusted to operate properly at either high or low speed, cannot be so regulated as to give satisfactory results between wide ranges of speed. The Bingham compensating carburetor, it is said, obviates this difficulty because of an automatic air control which regulates the gasoline before leaving the spray-jet. It is also equipped with the Gutermuth frictionless, guideless valve, the license for the use of which is owned by the Bingham Company, and which is said to be the quickest acting valve made. This valve governs an auxiliary air passage which makes the carburetor very economical in the consumption of gasoline. The prices range from \$15 to \$25, according to size.

### Heissler Lighting Battery.

Heissler Storage Battery Co., 1425 Michigan Ave., Chicago. All batteries made by this company are so constructed that they may be used for lighting purposes, but a special type is made particularly for this in 6-volt, 120 ampere hour capacity and in 6-volt, 80 ampere hour capacity. The smaller one will light three lights and is very useful about a small boat. The larger battery will light five lamps equal to a total of 26 candle power and will burn with this equipment for a total of 27 consecutive hours on one charge. Where greater efficiency is desired the batteries are made in a larger size with a capacity of 150 and 200 ampere hours. The price of the 6-80 battery is \$25, and of the 6-120, \$36.

### Sun-Lite Generator.

Richard A. Crooker Co., 24-26 Columbus Ave., Boston. This generator has been designed to meet the demand for a method of providing a brilliant and reliable light which will at the same time be economical and simple to install and maintain. It is entirely automatic in action and requires no attention from one filling to the next. There is no odor or loss of gas and a flame of any desired size can be had to suit conditions. The generator is so arranged that the gas comes to the burner cool and filtered, so that there is no danger of clogging. One charge will maintain a continuous light for 25 hours from four pounds of carbide of any size and two quarts of water.



## Nonoi Silencer.

Palmer Bros., Cos Cob, Conn. A new exhaust silencer and cooler has been placed on the market by the manufacturers of the Palmer motor, the operation of which can be seen from the accompanying illustration. It is made in sizes to fit exhaust outlets of 1½, 2 and 2½ ins. and is made for either two or four cycle motors. The sectional view shows the shape of the chamber for the expansion of the gases and the method by which the water combines with the exhaust to serve the double purpose of cooling it and silencing it as well.

## "Nice" Thrust Ball Bearing.

The Pressed Steel Mfg. Co., Philadelphia, Pa. These bearings are shaped in dies instead of being turned, and the great saving of labor and material effected by this process has enabled the makers to furnish a most satisfactory bearing for the marine motor trade, at a great saving. The material used is the same as is used in the all-turned thrust bearings, and they are hardened by the same process, so that the bearing will do the same work as those made by the more expensive methods. This company also makes several other styles of ball bearings, the one best known no doubt being the combination radial and thrust bearing, which has been used extensively by automobile manufacturers, and in fact in all machinery lines. The bearings range in size from ¼ in. to 2½ in. shaft.

## Star Safety Rear Starter.

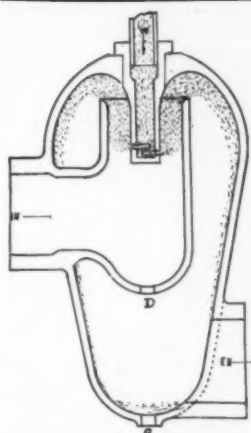
Star Starter Co., 170 Broadway, New York City. This device is a small and light mechanism which is completely housed and is actuated by a handle similar to a motor car crank, which can be bolted to any bulkhead or suitable bracket. Should the motor back-fire, the handle in the operator's hands at the time is not affected, as the device prevents any back revolution from reaching the handle. The handle, however, can be revolved backward to any point desired. The device is connected to the engine shaft by a chain and sprocket and can be geared to various ratios depending upon the horsepower of the motor. The safety device used upon this starter is the same as that used for motor car types and the only difference in the entire mechanism is in the method of attaching.

## Duplex Ignition and Illuminating System.

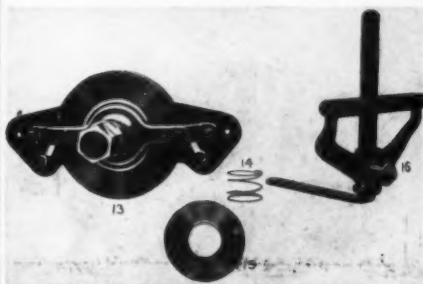
Duplex Electric Co., Fond du Lac, Wis. This system is used for both ignition and illumination purposes and consists of a dynamo operated by the engine, a control automatically connecting the dynamo with the storage battery when the polarity of the current exceeds that of the battery and automatically disconnecting it when the dynamo current exceeds an amount in excess of that for which the battery is designed. In addition to these there is a storage battery of large capacity and a switchboard arranged for a volt ammeter, a switch for the lights and a switch for the current between the generator and the storage battery. For ignition there is supplied either a vibrator or non-vibrator coil with a timer or a combined timer and distributor. These lighting and ignition systems are supplied with three different outfits, outfit A including the lighting system alone selling for \$90, outfit B, including both the lighting and ignition system for \$125, and outfit C containing complete lighting and ignition systems, but a different type of coil and timer, for \$115.

## General Electric Magneto.

General Electric Co., Schenectady, N. Y. The type of magneto known as AY-106 has just been placed upon the market and is designed for a dual high tension system upon one set of plugs, the low potential current generated being transformed through a non-vibrating coil to a higher potential for jump spark work. The magneto is made in five forms for motors of different sizes and speeds, the forms varying only in dimensions, the general construction being the same. The magnets are of tungsten steel and the coils



The Nonoi Silencer.



Parts of the Star Safety Starter.



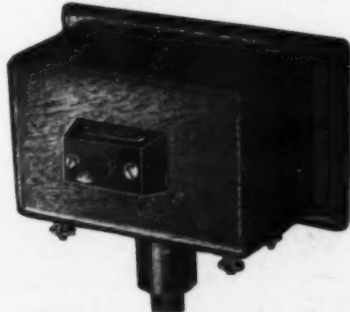
Switchboard used with the Duplex Ignition and Illuminating System.



The Snappon Spark Plug.



The Smith Gasoline Meter.



Coil used with the Stevens Igniter.

are made absolutely waterproof by a special process of insulation and impregnation. Ball bearings are used throughout. The interrupter mechanism is very simple and is specially designed to facilitate adjustment by embodying a fixed contact secured by means of a pinch screw instead of check nuts. The design is such that all parts requiring periodical inspection are easily accessible and can be readily taken apart without the use of special tools. The switch is provided with an attachment for starting on the spark.

## Hartman Electric Lighting System.

The Hartman Electrical Mfg. Co., Mansfield, O. This system is designed particularly for motor boats up to 75 ft. in length and consists of a low voltage generator of compact design driven from a pulley on the engine shaft, a battery which floats on the line and acts as a reservoir, and a regulator which automatically maintains a constant voltage at the lamps and battery. It is entirely automatic in its operation, the regulator box containing a switch operated by a relay which breaks the circuit between the dynamo and battery when the motor is not running, thus preventing the battery from discharging through the generator armature. When the motor is running all excess current is absorbed by the battery, so that the current flow is greatest when the battery is low, and tapers off gradually as the battery becomes fully charged. The price of the six-volt system complete is \$105 and of the 12-volt system, \$150. Although the system is designed primarily for lighting it also furnishes an excellent source of ignition.

## Snappon Spark Plug.

The Bingham Mfg. Co., 227 Prospect Ave., N. W., Cleveland, Ohio. This plug in itself has a three-point negative electrode any one of which points will give sufficient flame to fire the charge in the cylinder. The terminal consists of an outer insulating sleeve and internal bushings and a positive electrode and the bushing itself consists of an outer boss, steel balls, springs and screws. The springs press the steel ball partially through an opening in the boss and when slipped over the positive electrode the balls are always compressing into the groove in the positive electrode. To attach to the high tension wire the boss is unscrewed from the insulating sleeve with the high tension wire fixed into the opening provided and a set screw firmly screwed down. The price is \$1.25 complete or \$0.90 for a plug without terminal and \$0.50 for a terminal without the plug. They are made in half-inch gas, A. L. A. M., or metric thread sizes.

## Smith Gasoline Meter.

Smith Gasoline Meter, 240 Thoroughfare Building Broadway and 57th St., New York City. This meter may be mounted on the bulkhead directly under the steersman's eye and records a constant register of fuel consumption under all conditions. It accurately measures gallons when filling the tank and affords a check upon the motor efficiency by showing the amount of gasoline consumed for a given distance. The dial is connected by tubing to an accurate float in the tank and cannot fail to operate and give correct readings at all times. A means for instant detection of leaks is afforded by the use of this instrument and there is no need to open the fuel tank at any time except to replenish the supply. The price is \$15.

## Stevens Igniter.

The E. W. Stevens Co., Hurlock, Md. This ignition system is designed to retain the constant spark advantages and regularity of the magneto without its liability to wear, and to maintain a constant spark mechanism which will last indefinitely. In addition to this it is designed to give such a high efficiency from a single set of dry cells that one set per season will be sufficient. Only one make and break is used in the primary circuit to serve all the cylinders, with a single spark coil and an efficient distributor. The contact is made and broken mechanically, not magnetically, by a touch instead of rolling or rubbing. There is only one contact per ignition, the period being uniform regardless of the engine speed through certain limits.

## The American Whistle.

American Whistle Co., 16 Wakefield Ave., Buffalo, N. Y. As can be plainly seen from the illustration this whistle operates from the exhaust and may be attached, if desired, without cutting into the exhaust pipe or in any way weakening it. The sound is very penetrating and can be heard at a distance of one mile. When loud blasts are not desirable the whistle can be thrown only partially over the exhaust and a mild, clear tone is produced. Each whistle is furnished complete with a pedal, wire and pulley and sells for \$8. It is made in five sizes to fit over exhaust pipes of the following diameters:  $1\frac{1}{4}$  inches,  $1\frac{3}{8}$  inches,  $1\frac{1}{2}$  inches,  $1\frac{3}{4}$  inches, and 2 inches.

## 2-in-1 Universal Joint.

The Vanguard Engine Co., 18 Tremont St., Boston. A joint of the telescopic variety has been placed on the market by this company, which is said to do the work of two joints with a great deal less friction. It is designed to be used in any position where it has formerly been necessary to use two joints with a shaft between, and overcomes the difficulties with practically no lost motion, wearing or friction. The feature of the device lies in the telescopic movement, a new principle, and the Two-in-One admits of more angularity with a less diameter swing in circle than the ordinary type. The joint is very simple in construction and is sold with two equipments, one of which is designed particularly for motor car use. They range in price from \$7 to \$28, according to size and equipment.

## Barthel "Jewel" Yacht Stove.

Globe Gas Light Co., 25-27 Union St., Boston. These stoves are imported and are made with a galvanized frame and a brass rail around the top. A pan is placed beneath the stove and their operation is absolutely safe. The fuel used is kerosene and the usual trouble experienced with kerosene stoves has been eliminated by the use of a new style of vaporizer. The greatest trouble ordinarily common to kerosene stoves is in the kerosene oil itself, which, in course of vaporization, leaves a considerable amount of residue in the form of carbon, so that sooner or later the vaporizer becomes choked. A vaporizer once obstructed in this manner proves too troublesome to clean and must be thrown away. In the "Jewel" stove the vaporizer is so constructed that it will burn for about 300 hours and can then be thrown away, since it can be replaced for 25 cents. The stove illustrated is made in three sizes, with one, two, or three burners, and the price ranges from \$7.25 to \$20.75.

## Endurance Oil.

Endurance Autoil Co., Muncie, Ind. This oil is obtained by a secret process of refining which so thoroughly removes the carbon that it will lubricate with great efficiency any air or water-cooled motor without leaving any carbon deposit. So confident do the manufacturers appear to be that this oil will leave no deposit of carbon that they offer to users of Endurance Oil payment at the rate of \$15,000 per ton for any carbon deposits taken from motors using the oil exclusively. It is said that carbon deposits in the cylinders of gasoline motors cost motor car users last year about \$5,000,000, and Endurance Oil is the result of experiments to eliminate these deposits.

## Sanitary Cloths.

Sanitary Rag Co., Kalamazoo, Mich. This company is now packing its washed wiping cloths in bales weighing approximately 100, 250 and 500 pounds each, and these cloths are sold at prices that make them cheaper than cotton waste. The goods are extra light in weight, running five to seven pieces to the pound, and are free from buttons, hooks, eyelets, starchy parts, etc. The goods are sold in four grades ranging in price from four to eight cents per pound.

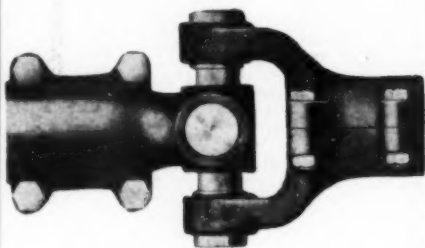
## Vizzo Spark Plug.

Auto Specialties Company, 250 Huntington Ave., Boston. This plug is equipped with a glass top in which may be seen at all

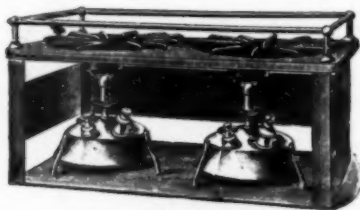


The American Whistle.

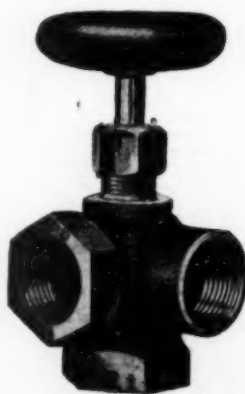
The Vizzo Spark Plug.



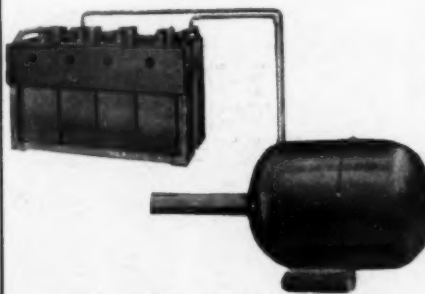
The 2-in-1 Universal Joint.



The "Jewel" Yacht Stove.



Detroit 3-Way Valve.



Holtzer-Cabot Lighting System.

times the exact nature of the spark that is being produced and locating any trouble between the plug and the magneto or batteries. The intensifier serves the purpose of intensifying the spark at the firing point and making it hotter, although the top of the plug is always cool and convenient to handle. The electrode, firing pin and contact firing ring are made from a special alloy wire that will not corrode or pit, and the plug will take six standard connections, the Packard, Rajah, Champion, Connecticut, T & T and the ordinary terminal. The Vizzo is guaranteed for two years and is made in three threads, the A. L. A. M.  $\frac{7}{8}$ -inch, Metric and standard half-inch pipe, and sells for \$1.50.

## Crockett Varnishes.

The David B. Crockett Co., Bridgeport, Conn. Two kinds of varnish are being manufactured by this company especially for marine use, one for outside and one for inside work. The Spar Composition is intended for spars of yachts and boats of all kinds, or for any outside use and cannot spot, crack, blister or scale. It is also absolutely proof against salt or fresh water and all kinds of weather. Crockett's Number 1 Preservative is an interior finish that will not mar or scratch and is not affected by coming in contact with any chemicals. It is especially suitable for finishing the interior upon yachts and can be rubbed and polished, or left with an egg-shell gloss as desired.

## Splitdorf Double Distributor System.

C. F. Splitdorf, 1679 Broadway, New York City. The Splitdorf Laboratories have just brought out a new product in the ignition line which consists of two distributors which are really two sections in one coil, thus making two magnetos out of one instrument. Two plugs are used in each cylinder, and with the use of this system the two sparks occur in synchronism, thus adding from 15 to 25 per cent. more power to the motor. The system embodies a different arrangement of the secondary terminals in the coil. In the single system one end of the secondary is connected to the ground wire in order to make a return circuit for the current passing across the plugs, but in the double system both ends of the secondary are brought out and connected to the center of two distributors.

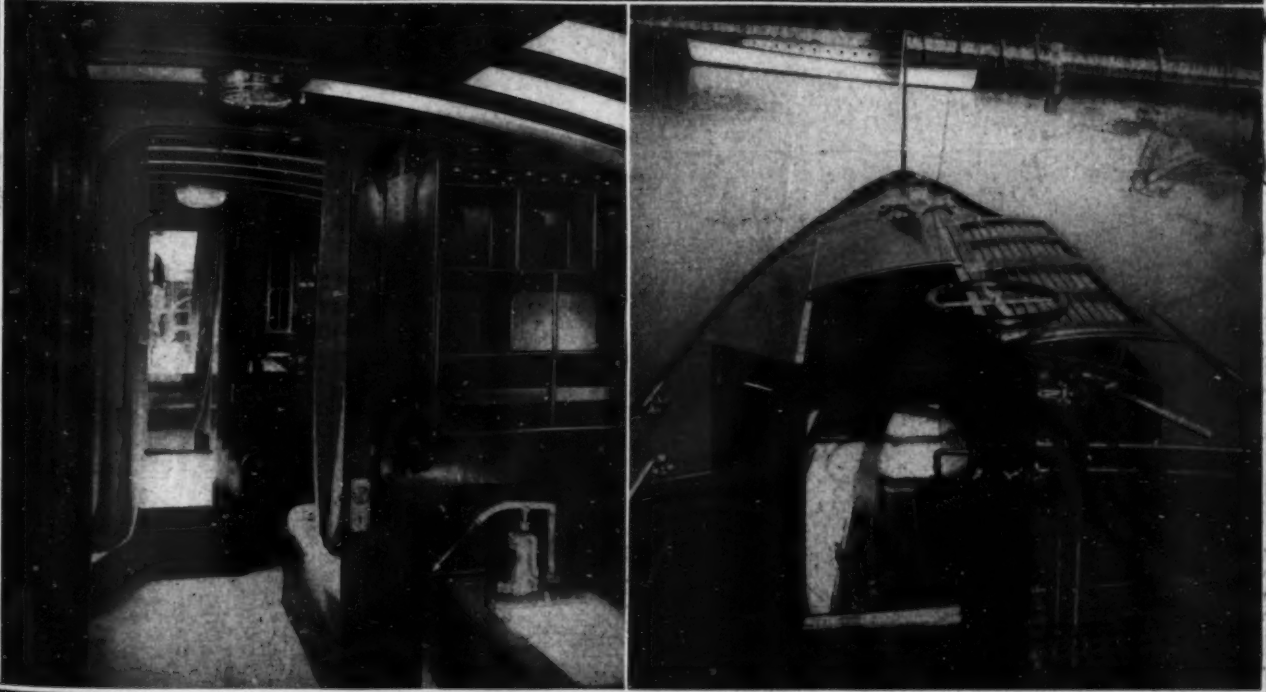
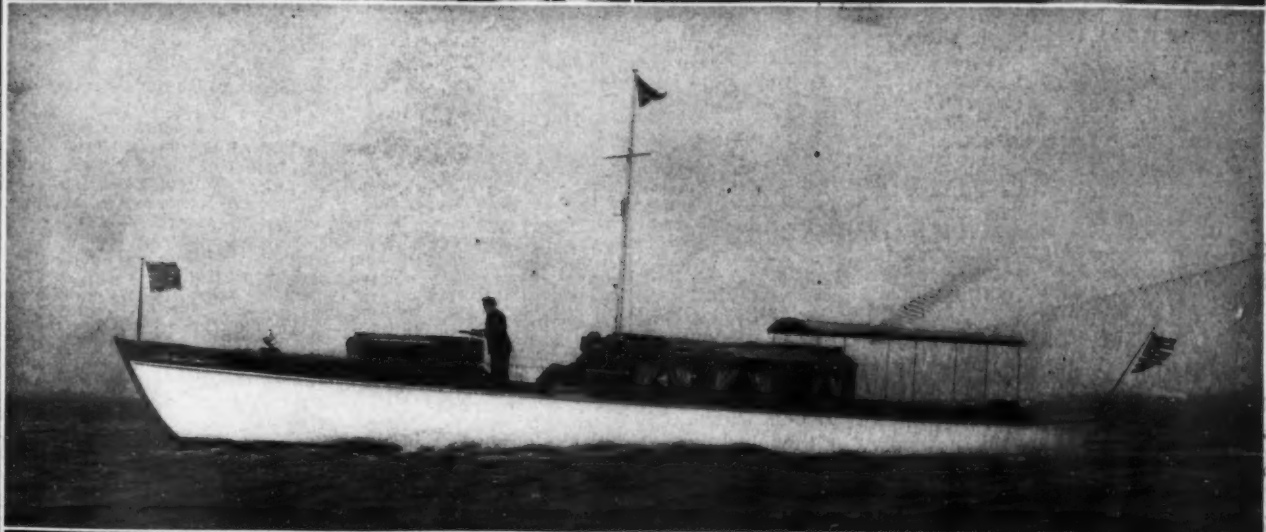
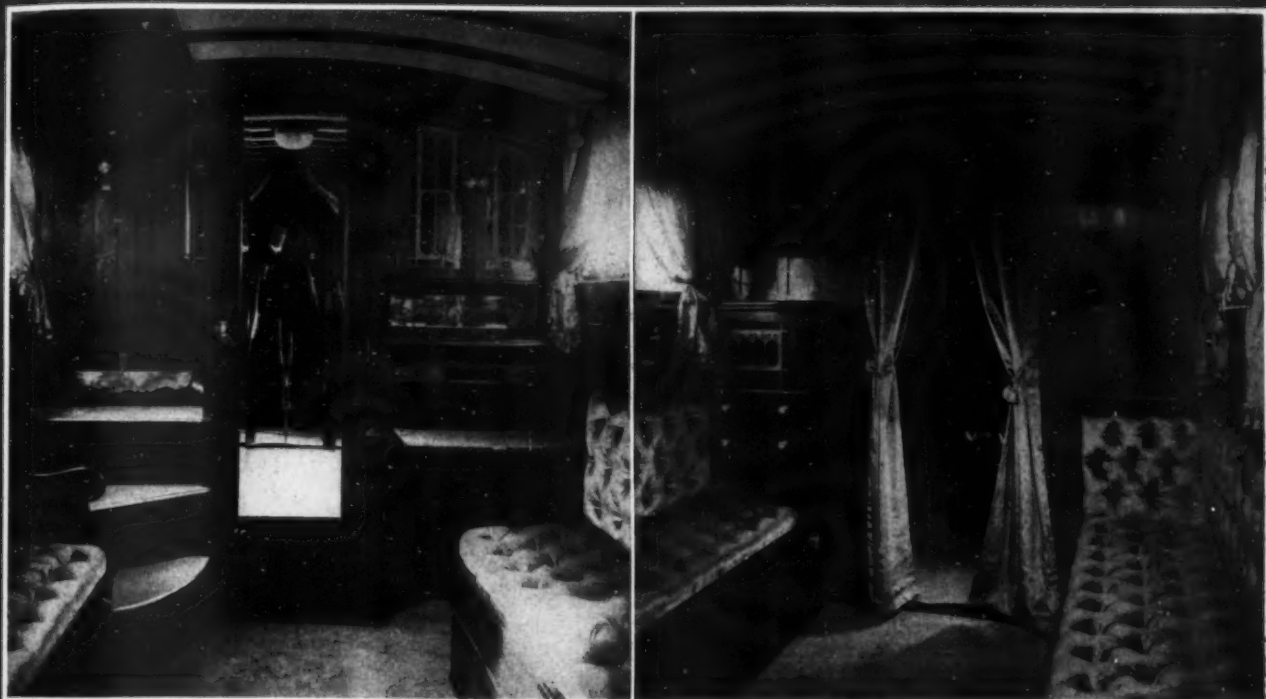
## Detroit 3-Way Valve.

Detroit Lubricator Company, Detroit, Mich. This valve is designed for use on marine engines to turn the necessary amount of water into the water-cooled muffler or exhaust, after it has passed through the water jackets, and allowing the remainder to run overboard. It consists of a globular body with three openings, one at the base through which the water enters, and two at the sides at right angles to each other. The shell is so arranged that all of the water coming up through the base can be turned through either one side or the other, or a part of the water through each. The handle is indexed to show what portion of the water is passing through either opening. The globular form of the body prevents the shell from sticking.

## H-C Variable Speed Dynamo.

The Holtzer-Cabot Electric Co., Boston and Chicago. This dynamo is designed to provide an efficient means of lighting a motor boat, and the mechanical construction is very rugged and strong, ball bearings being used throughout. It may be driven by gear or friction and produces enough current while running for two large-candle-power lights and a number of smaller lights. A new type of battery is used in connection with this system, a combination of iron and nickel in an alkaline solution, and there is said to be no sulphation in its operation. It can be left indefinitely either charged or uncharged and it will not deteriorate; it will give practically an unlimited number of complete discharges, and its weight is but half that of the ordinary lead type. This battery cannot be harmed by overcharging, and all that is necessary in its care is the occasional filling of the cells with distilled or rain water. The price of the dynamo is \$75 and of the battery \$40.





Rumsonhill, the Elco de Luxe 54-footer owned by Thomas N. McCarter and described on page 54.



#### Large Motor Wanted for Africa.

A company in Brussels, Belgium, has been making inquiry of the trade in this country in regard to obtaining a 500 h.p. marine motor to operate on fuel oil, for use in the navigation of the Congo River, in Africa. These people state that they have been investigating European motors, but what they have seen does not give them the impression that the question of motors of large power and for heavy duty has received a practical solution. They want data concerning large power marine motors, the way they behave, their approximate cost, etc., and want some reliable American manufacturers to send them particulars. The motor must be good and strong, of simple design and easy to operate, since it is intended for a country where skilled engineers are scarce and repairs difficult. Address: CTRAS (Société Anonyme), 5A, Rue Du Congres, Bruxelles.

#### Craig Removal.

James Craig, mechanical engineer, announces the removal of his office and works to a new location at 807-841 Garfield Ave., Jersey City, N. J.

#### Gray Chicago Agency.

W. L. Masters, well known to the motor boat trade in and around Chicago, has taken the agency for Gray motors in several Illinois and Indiana counties. Mr. Masters has been agent for several different gasoline motors in the past, but this season will handle the Gray exclusively.

#### A New Oil Company in Old Hands.

The Wolverine Lubricants Company, with offices at 80 Broad Street, New York City, has entered the field to market marine motor lubricants. The officers of the Wolverine Company are the same men who organized and successfully conducted the business of the Havoline Oil Company. Mr. T. E. Tomlinson, founder and former president of that concern, is president of the new company. The Packard oils, authorized and approved by the Packard Motor Car Company's laboratories, are now manufactured by the Wolverine Lubricants Company. They will also market a full line of motor oils,

known as Wolverine Oil and Wolverine Crystal. The new company, it is reported, has secured the services of most of the manufacturing, sales and executive forces formerly associated with Mr. Tomlinson.

#### Scripps 1911 Catalog.

The Scripps Motor Co., of Detroit, Mich., have issued a handsome new illustrated catalog, showing a complete line of their 1911 models. Among the engravings shown is Paul Hesser's well-known "Idlewild III." No radical changes have been made in the 1911 Scripps motors, the present designs being essentially the same as those of 1910, except that they have been refined in minor detail and a few new features added.

#### A Sterling Spanish Catalog.

The Sterling Engine Company, of Buffalo, N. Y., alive to the demands of the export trade, are now issuing a Spanish edition of their 1911 catalog. Its 32 pages, fully illustrate and describe the different types of Sterling engines, and also present photographs of well-known Sterling-equipped boats.

#### Moore of Boston Removes.

C. Frank Moore, one of New England's largest motor and boat distributors, has removed from 139 Congress Street to 220 Devonshire Street, Boston, where larger quarters will give more room for his increased business. Mr. Moore has associated with him as naval architect, W. J. Deed, Jr., and L. L. Borden, as marine broker. In addition to Gray motors, which he has handled since that company began business, C. Frank Moore is also New England distributor of Loew-Vic-

tor, Ralaco, Oriole, and Evinrude marine motors.

#### The Right Way to Measure Fresnel Glass in Lights.

E. T. Chamberlain, Commissioner of the Bureau of Navigation of the Department of Commerce and Labor, has announced a ruling as to the proper way of measuring fresnel glasses in marine lamps. This settles the question raised by the two conflicting opinions that had been previously given. The following copy of a letter gives the new interpretation:

Department of Commerce and Labor,  
Office of the Secretary,  
Washington, March 21, 1911.

CORNING GLASS WORKS, Corning, New York.  
Gentlemen—Replying further to your letter of the 20th ultimo, in which you inquire as to the correct method of measuring fresnel or fluted glasses prescribed by paragraph b of section 3 of the Motor Boat Act of June 9, 1910, you are advised that the exterior surface of the glass should be ascertained by multiplying the height by the average horizontal width of the surface of the arc of the glass, which will give so much of the glass area as is actually illuminated to approaching vessels. The Department's letter of March 9th is modified accordingly. Respectfully,

BENJ. S. CABLE,  
Acting Secretary.

#### Matthews Agency in Chicago.

The Matthews Boat Company, of Port Clinton, Ohio, designers and builders of high-grade cruising boats and express launches, are now represented in Chicago by James M. Wait & Co., 1205 Michigan Avenue, who will give their attention to all inquiries from that vicinity in regard to Matthews boats.

#### Homer Expands.

The great increase in the past year in the marine motor business of Arthur P. Homer, of Boston, has compelled him to rent two more offices and a large warehouse. The illustration we give shows the main salesroom. Adjoining this is a drafting room and office. Mr. Homer conducts a designing and brokerage business, and is distributor for Sterling, Eagle, Waterman, Elbridge and Reynolds marine motors.

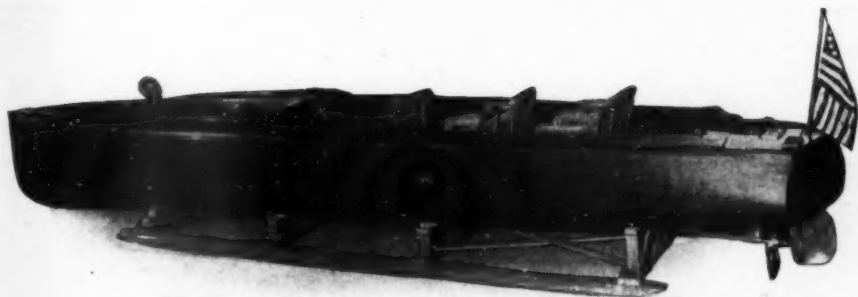
#### Gordon Propellers in Cleveland

We wish to correct an error that appeared on page 55 of our March issue, in a



Main office and salesroom of Arthur P. Homer, 88 Broad St., Boston Mass.





A runabout of the Niagara Motor Company.

paragraph describing the exhibit of Gordon propellers at the New York Motor Boat Show. The address of the Gordon Propeller Company was given as Cincinnati, whereas it should have been Cleveland.

#### A Change in Firm Name.

Stanley M. Seaman announces that the partnership of Seaman & Huntington has been dissolved, and that the marine brokerage and insurance business will be carried on as heretofore under the name of Stanley M. Seaman, 220 Broadway, N. Y.

#### Anderson Agency in New York.

The Hudson Engine Company, 120 Liberty Street, New York, have been made agents for the metropolitan district for the Anderson marine motors, made by the Anderson Engine Company, of Shelbyville, Ill.

#### A Marine Brokerage Succession.

Stephen F. Curtis announces that he is successor to Harold W. Browne as yacht broker and designer, and dealer in marine engines and accessories, with office in the Maritime Exchange, 78 Broad Street, New York.

#### Jacobson-Brandow New York Branch.

The Jacobson-Brandow Company of Pittsfield, Mass., makers of "J.-B." magnetos and coils and the "Imp" spark plug, have opened a branch at 116 Nassau Street, New York City, where a complete stock of their ignition devices will be carried.

#### Briggs & Stratton's New Manager.

Briggs & Stratton, of Milwaukee, Wis., makers of the B. & S. igniter and switch, have recently made William S. Pearne their general sales and advertising manager. Mr. Pearne had been for ten years with Julius Andrae & Sons Co., one of the largest electrical jobbing houses in the Northwest.

#### "Perfect" Marine Compass Light Prices.

In the description of the "Perfect" light attachment for marine compasses, made by the Marine Compass Company of Bryantville, Mass., which appeared on page 50 of our April issue, an error was made in the statement of prices. The prices for different sizes of the complete liquid compass with "Perfect" light attachment range from \$14 to \$31.50.

#### Motor Boat & Supply Company's Catalog.

The Motor Boat and Supply Company, 1516-1520 Columbus Road, Cleveland, Ohio,

have issued a new 125 page catalog covering a complete line of supplies for motor boatmen. This firm is also interested in the manufacture of a heavy duty four-cycle marine motor, which is attracting favorable attention.

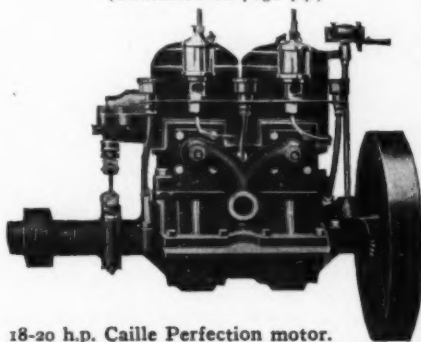


A 26-foot Toppan raised deck cruiser.

#### T & S at Palm Beach.

In regard to the performance of T & S in the long distance race for the Palm Beach Grand Prize, in the recent regatta on Lake Worth, the Sterling Engine Company of Buffalo have written us as follows:

(Continued on page 74.)



18-20 h.p. Caille Perfection motor.

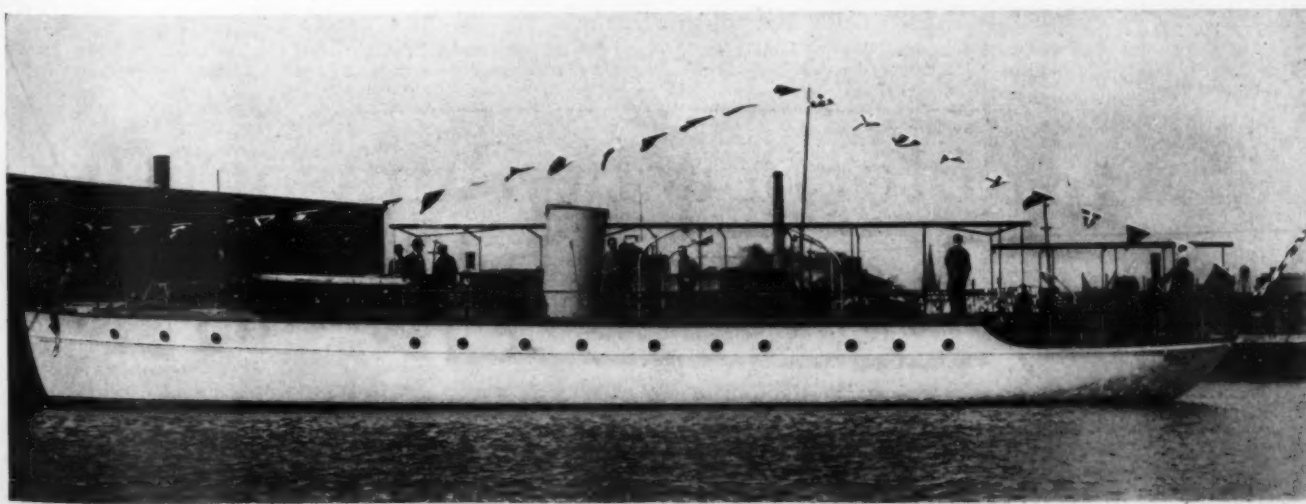
## A Toppan Off-Shore Cruiser.

The accompanying illustration shows a 26-ft. offshore raised deck Toppan cruiser, built by the Toppan Boat Mfg. Company, 21 Haverhill St., Boston, and equipped with 8-10 h. p. 2 cylinder Toppan jump spark motor. She was launched the first of April and on her maiden trip developed a speed of approximately 9 miles per hour. The boat is exceptionally seaworthy and commodious, having a 10 foot cockpit and very roomy cabin. The fly-wheel of the motor comes inside the cabin, and this is covered with a slide, separating the engine from the cabin and keeping away all heat and odor. At the same time it can be started from the cabin, a very convenient thing in rainy weather. The engine proper is covered with a removable housing. The boat has canvas covered decks, a hatch forward opening into

the cabin, and a flush toilet with galley opposite to it—in fact it is in every detail an up-to-date cruiser. The price of this boat complete with all fittings is \$925, which includes a military mast and sail, and cushions.

## A New Caille Perfection Motor.

The Caille Perfection Motor Company, of Detroit, Mich., have added a new size motor to their already large line of two-cycle engines. The new motor is a two-cylinder 18-20 h.p., of a design similar to their 8 h.p. heavy duty motor, which has proved very successful for use by fishermen and for heavy work boats. The new motor is recommended for towing and ferry use, being built heavy enough to stand hard service. Before placing this motor on the market the company had it thoroughly tested out for three months in constant service by their agent in Charleston, S. C., who reported it satisfactory in every way.



Remlik III, designed by Swasey, Raymond & Page, built at the yard of Murray & Tregurtha. She was the first large cruiser to be launched this season in Boston and is a possible entry in the Bermuda race.



The 50-foot yacht tender Ruth, designed by Fred D. Lawley, and built by Geo. Lawley & Son Corporation. She is propelled by a 4-cylinder, 40 h.p. Sterling.

## Better Be Sure Than Sorry.

(Continued from page 32.)

will occur should the rubber hose happen to become disconnected from the intake.

Then I shall be particular to dust all dirt and chips from under the ceiling, so that foreign matter cannot get into the bilge to cause trouble when I undertake to pump her out. A clogged bilge is a nuisance and a menace. I'll clean out the limbers, too, and see to it that water has an uninterrupted passage to the pump well. Perhaps I shall go further than that and paint the inside of the boat's skin as far up from the keel as I can reach.

The drip pan under the motor will be lengthened a few inches so as to catch all dope that drops from the thrust bearing and thin strips of brass will be tacked where the shaft bearings throw grease against the sides of the compartment; this latter addition being in line with cleanliness, the brass requiring only a slight wiping with waste to remove the accumulation.

I shall take special pains to procure a fire extinguisher that can effectually cope with a gasoline blaze inside the boat. I shall, also, put a pint of sand in a dozen cheesecloth bags and have these bags stowed in convenient corners the entire length of the boat as auxiliary extinguishers in case I can't get at the tube hanging just inside the companion. Should fire occur, which I expect won't happen, I'll make a target of the blaze with the sand bags, throwing them with force enough to break the cloth and scatter the sand where it will do good. By having the bags at convenient

points the fusilade can be instant and, probably, effectual.

Seeking more speed, I shall sharpen the after edge of the deadwood to eliminate eddy resistance. I shall sharpen the propeller blades with view to increasing rotations and I am going to instal a standpipe at the lowest point in the gasoline feed pipe to catch water caused by condensation in the tank. This standpipe, a size or two larger than the diameter of the feedpipe, will have a plug that can be removed to empty the pipe of water and sediment bad for the carbureter. And I will see to it that the tool kit contains an assortment of springs and other spare parts for the propelling plant. It's better to be sure than sorry.

Geo. S. HUDSON, Boston, Mass.

## Choosing the Right Boat.

(Continued from page 37.)

board, engined with a reliable slow speed motor. What further do we demand? Under normal weather conditions where do we spend our time when under way or at anchor? Below? We do not! We are in the cockpit or on deck. We loaf on deck, we eat on deck (if we have the room) and those of us who know, sleep on deck. Then let us have enough deck room and a big enough cockpit to do all these things in comfort.

Have you ever noticed the boats with large cabins under a raised deck and with a 6 foot cockpit, whose owners have never taken their boats out of the Hudson River. Do these men and their guests spend the long summer days in the cabin? No, they are crowded

into the cockpit and some of the more adventurous climb out on the forward deck and roast under a blazing sun. They have no place to loaf, all meals are served in a cabin made stuffy by the heat and smell of the motor and cooking, and sleeping on deck, even on the summer's most glorious nights, is an impossibility. The owner of this type of boat had an idea that he was going to Bermuda with her; instead he goes up to Croton Point. Of course a cruising boat must have a cabin and it should be a comfortable one, with toilet and galley and plenty of locker space. The motor too should be installed somewhere below decks, and so located that its ports will all be readily get-at-able at a moment's notice in case of a breakdown. Its location must also be made, having the fact in mind that the motor is after all used primarily as motive power for the boat and not as an instrument for burning the fingers and knocking the shins of owner and guests.

Insistence on the foregoing requirements does not seem to be incompatible with the possibility of plenty of deck room. Why can't we have all of the above and still have our deck space so arranged that we are not crowded in a small cockpit looking out over the sides instead of forward as we all like to do? Why can't we have decks, even on a 40-foot boat large enough to give us plenty of loafing space forward, 'midships and aft and under awnings, and in addition to this so arranged, that on hot days we may eat here and on pleasant nights sleep here?

As you have undoubtedly guessed, the writer, relying on his three years' experience, knows exactly how this may be worked out.

# The Motor Yacht Rumsonhill.

THE several photographs which appear on page 51 were taken during the trial trip of Rumsonhill, a 54-foot Elco De-Luxe day cruiser recently delivered by the Electric Launch Company of Bayonne, N. J., to Mr. Thomas N. McCarter of Newark.

The boat is 54 feet over all by 9 feet beam and 3 feet draft, and no expense has been spared in her construction and finish. The keel, frames, etc., are of white oak, and selected southern cedar, fastened with copper rivets, was employed for the planking. The joiner work, cabin, trunk, etc., are of mahogany, beautifully finished.

The power plant is a 60 horse power, six cylinder, air starting Standard engine which drives the boat at the rate of 15 miles per hour. It is installed under the deck forward, and this compartment also accomodates the crew. There is a low trunk over the engine, and just aft of this, and protected by it, is the bridge deck from which the boat is controlled by one man. From this deck an unobstructed view may be had in all directions, and there is ample room for three or four chairs besides the thwartship seat.

The cabin amidships is arranged with extension sofa seats, a writing desk, several

cabinets and full length hanging closets, and occupying the after part of the trunk are the galley and lavatory compartments. As the boat was intended for day cruising, the after cockpit is unusually large with a divan seat across the end and space for a half-dozen wicker chairs. The accommodation within the cabin is sufficient for four persons on an extended cruise, and the sleeping accommodation in the forecabin is sufficient for two men.

Mr. McCarter is now on his way, in Rumsonhill, for an extended cruise in the Chesapeake, and then the boat will be used at his summer home at Rumson, N. J., on the Shrewsbury.



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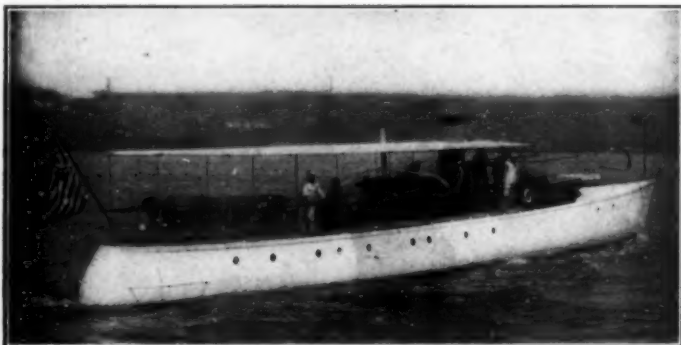
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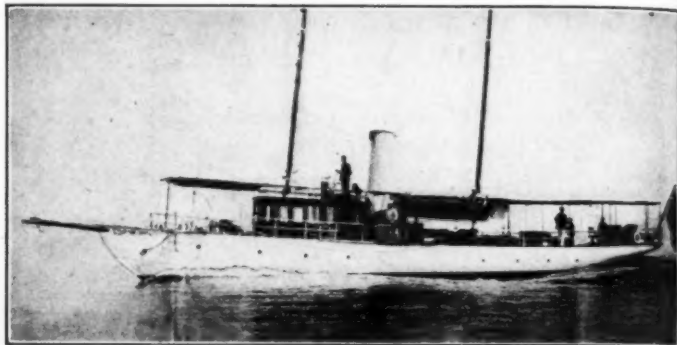
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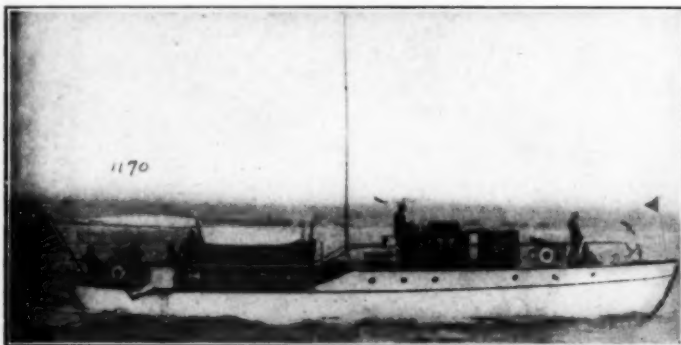
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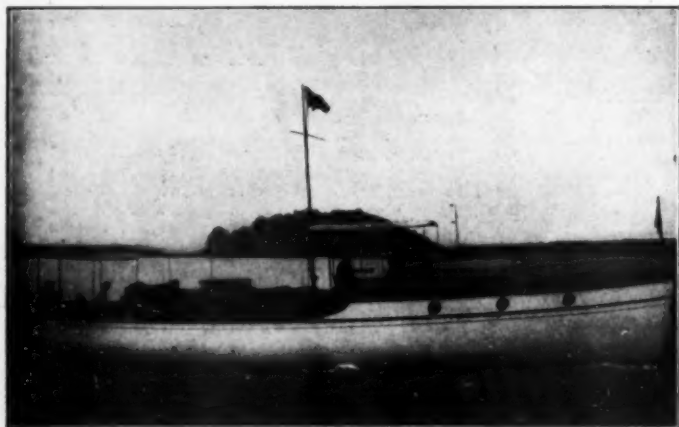
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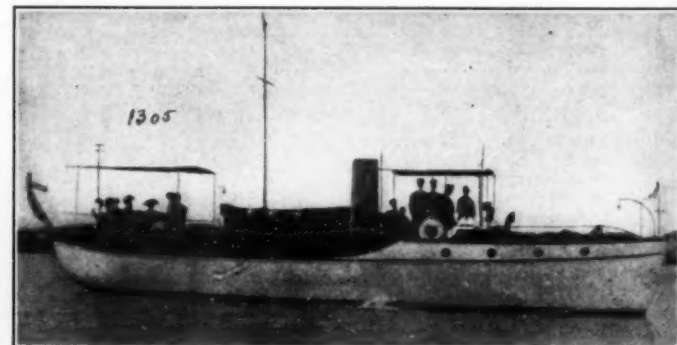
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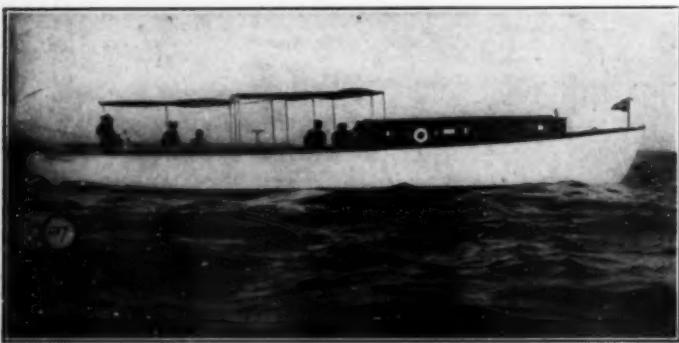
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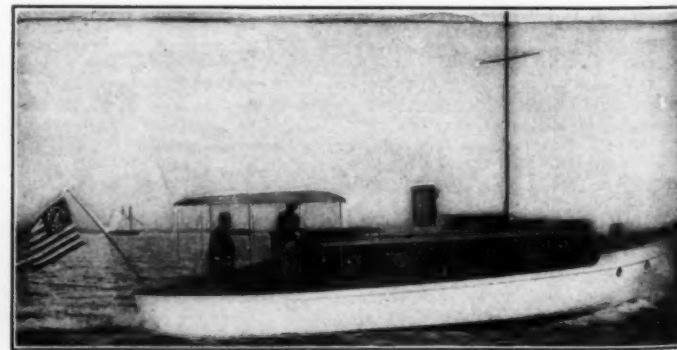
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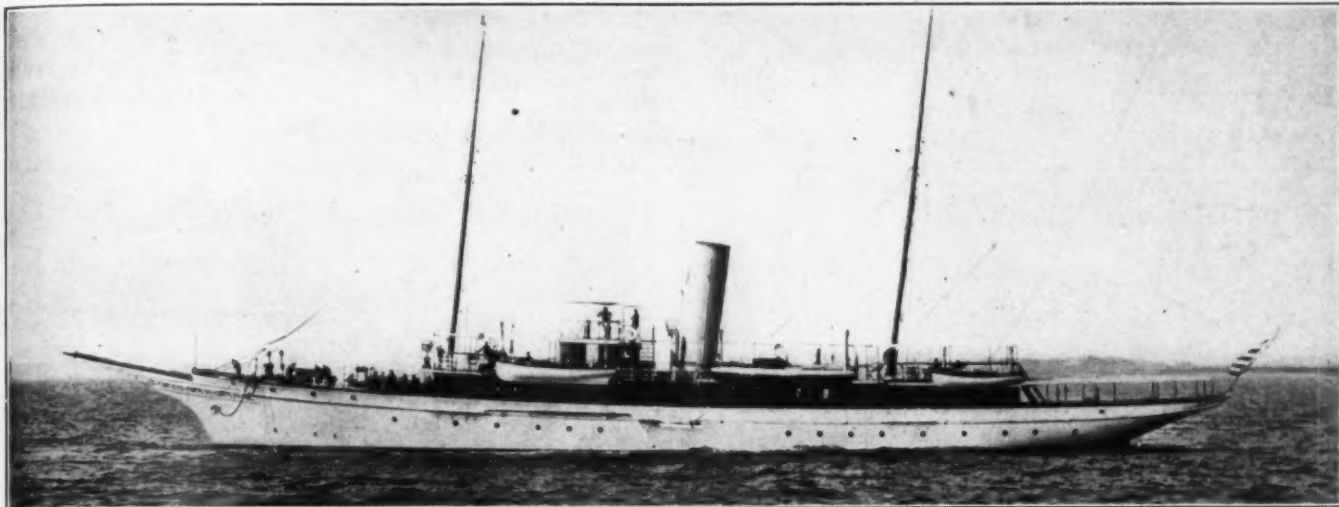
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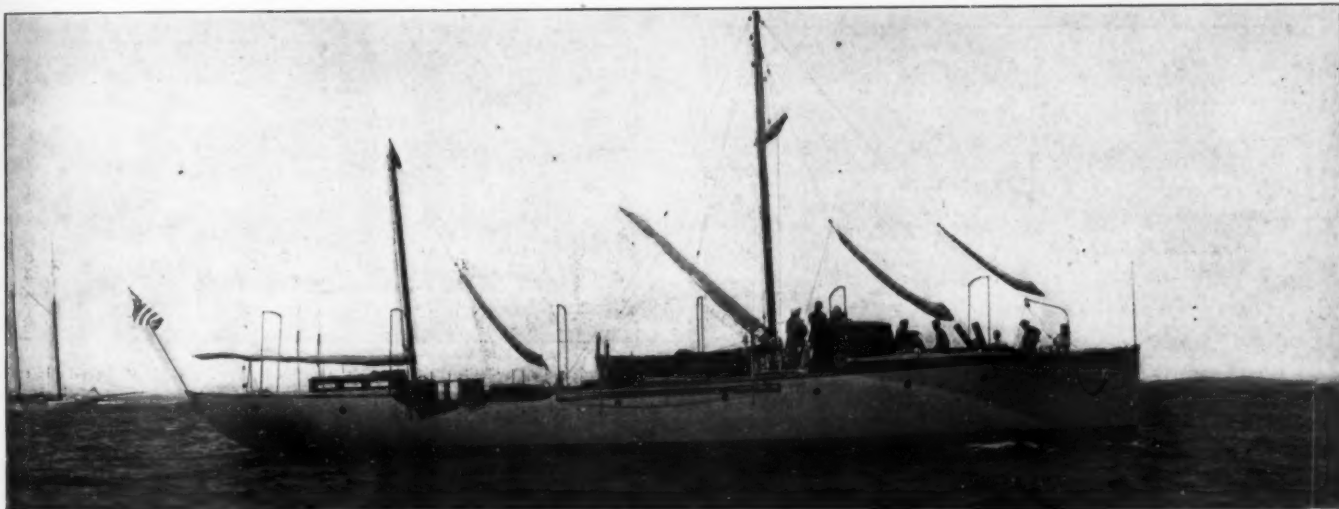
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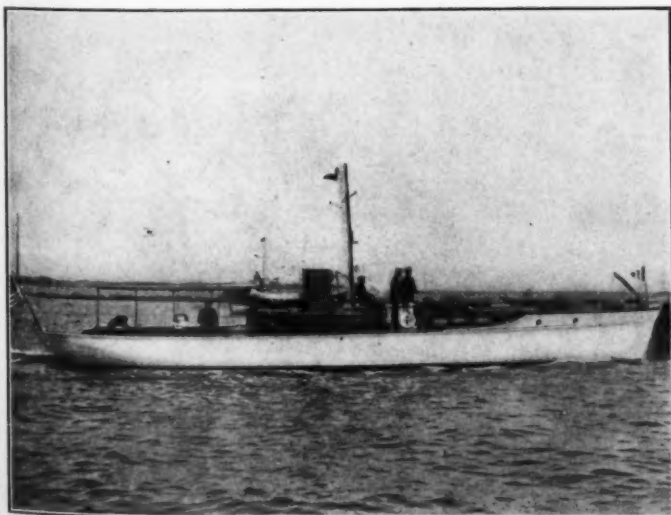
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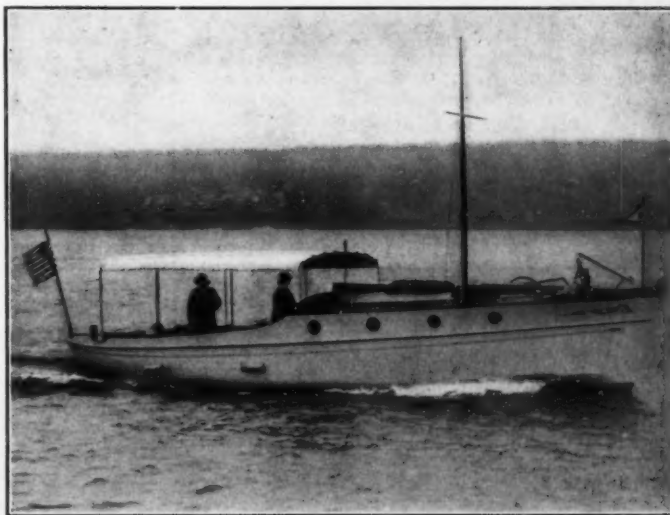
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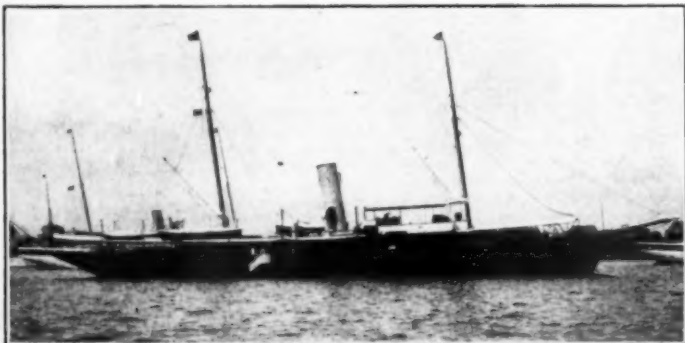
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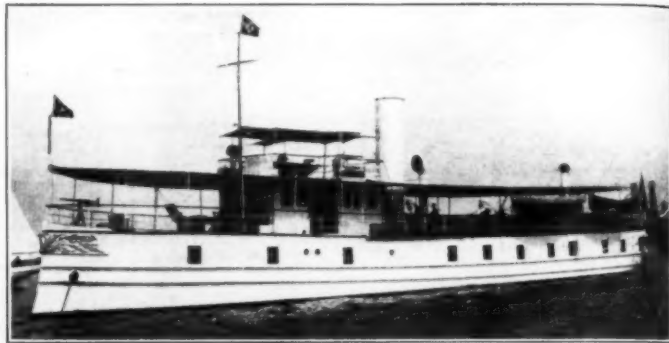
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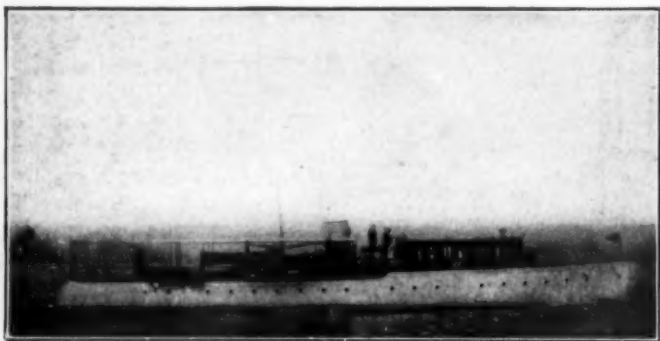
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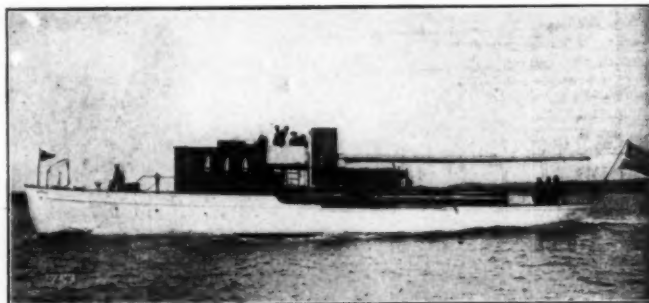
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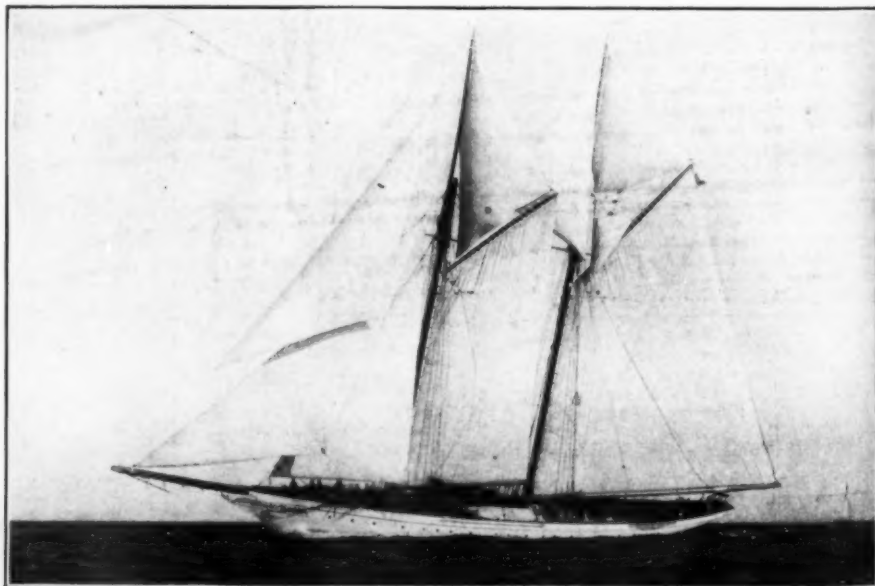
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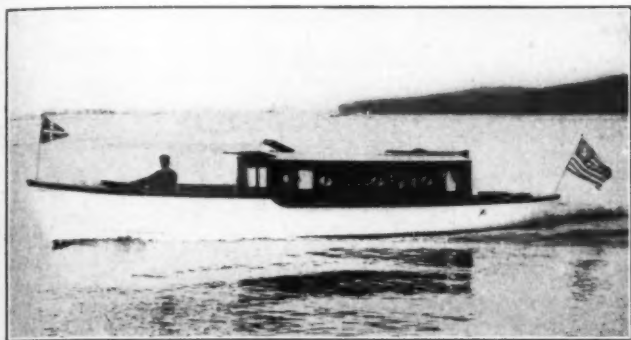
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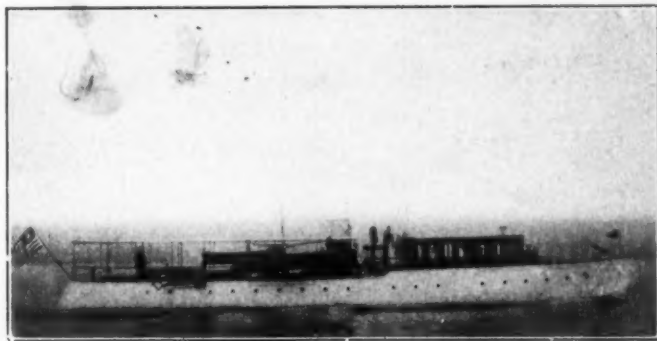
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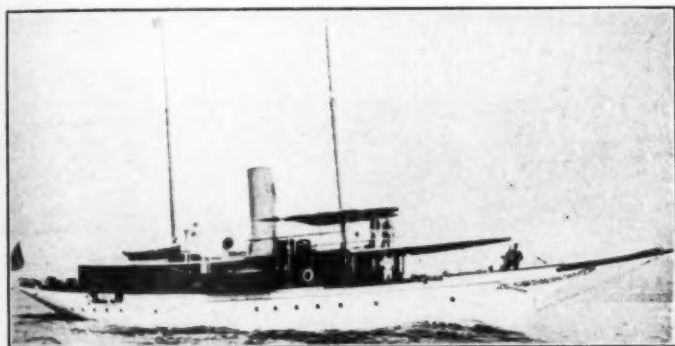
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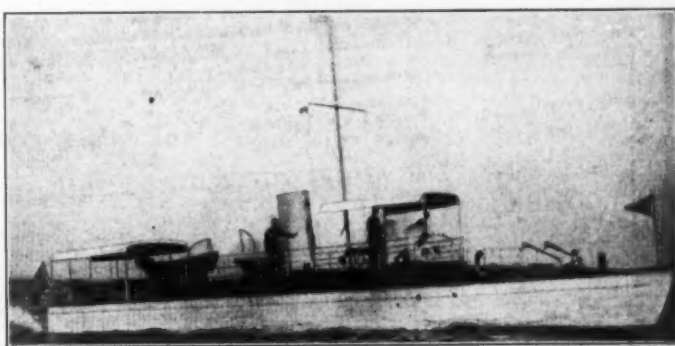
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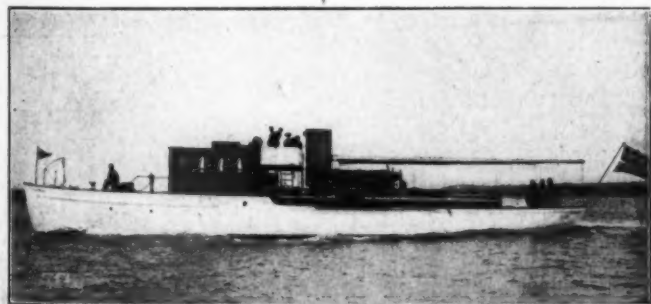
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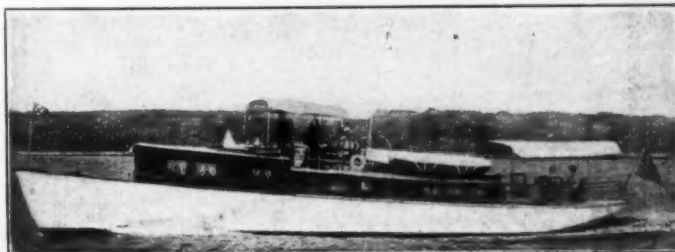
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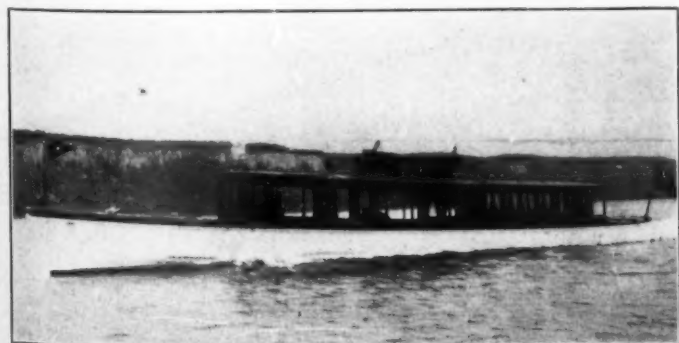
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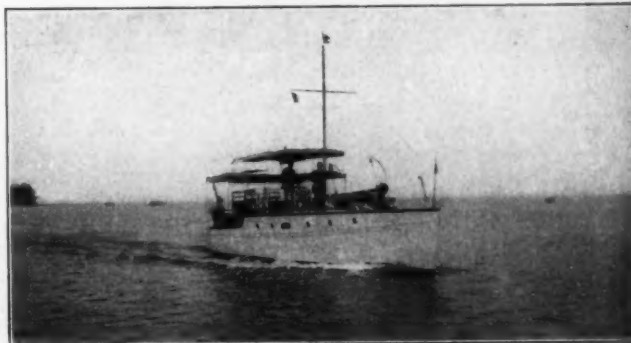
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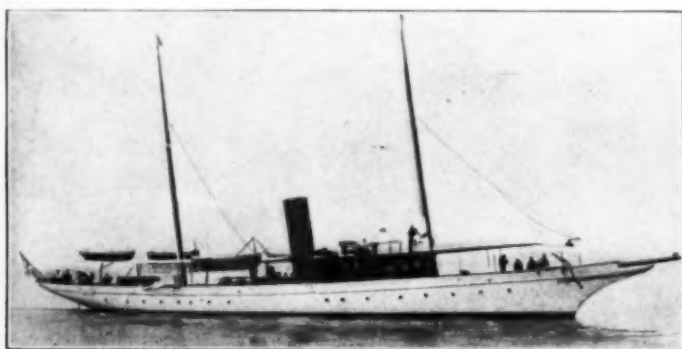
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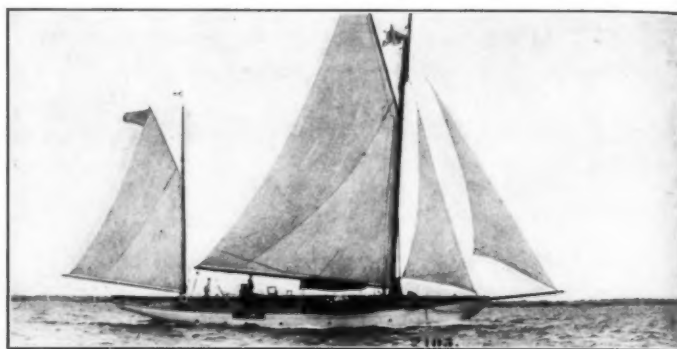
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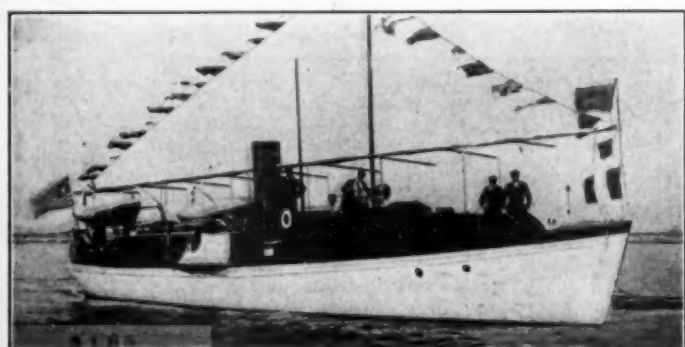
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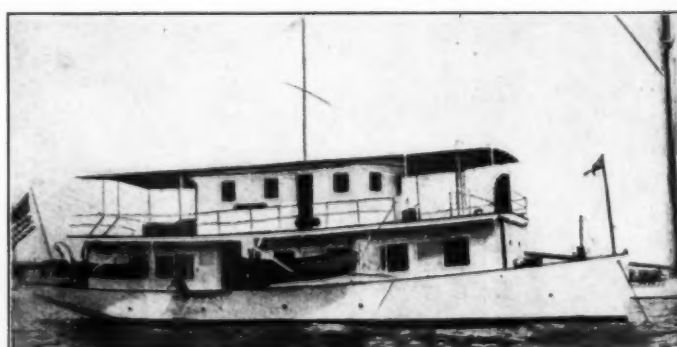
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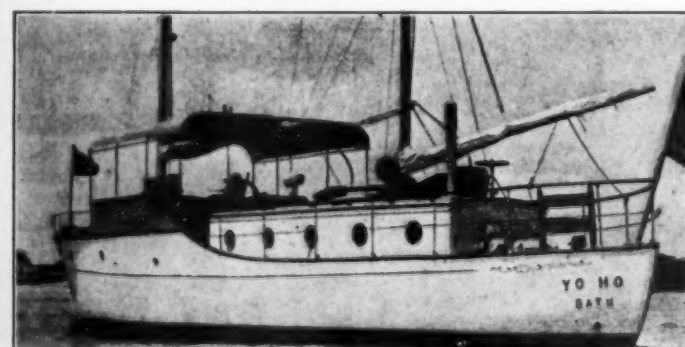
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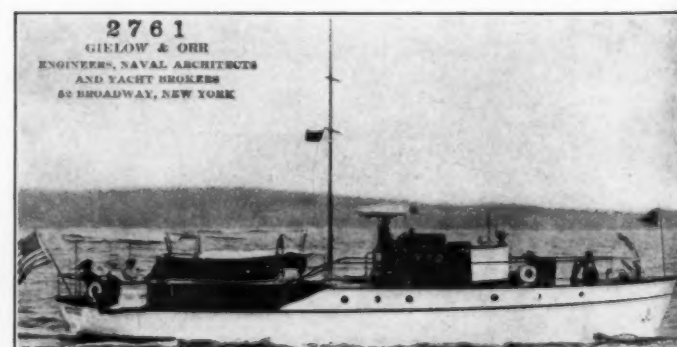
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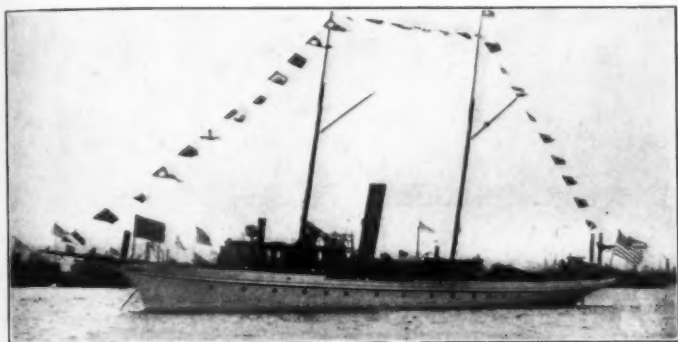
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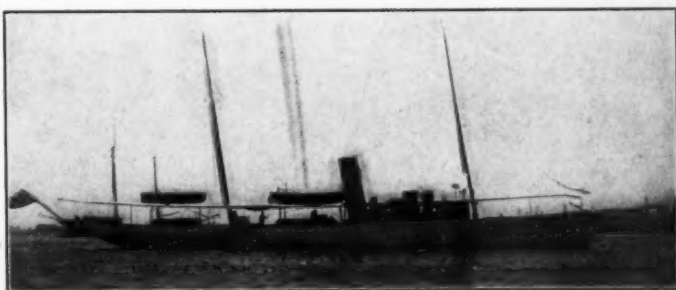
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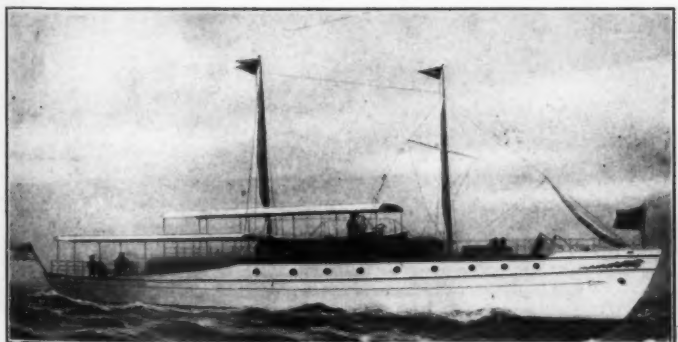
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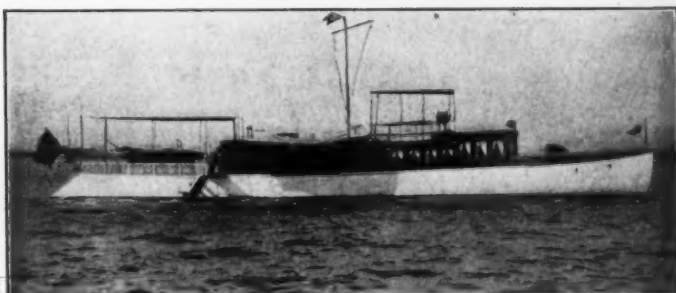
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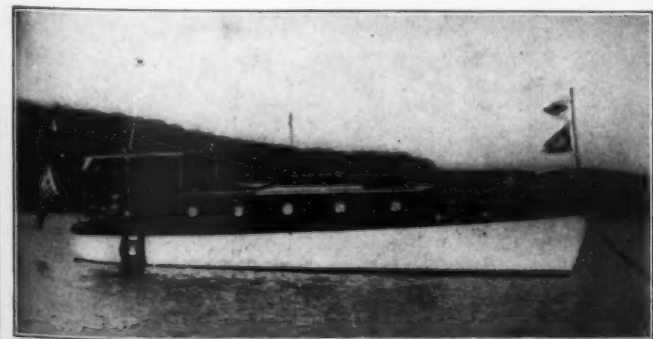
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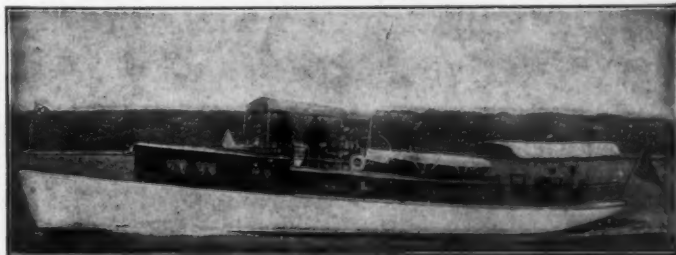
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No. 864.—40 ft. cruiser; Lamb motor; speed 12 miles.  
Please mention MOTOR BOATING.



No. 853.—65 ft. cruiser, twin screw; Standard motors; good accommodations; speed 12 miles.  
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When writing to advertisers please mention MOTOR BOATING, the National Magazine of Motor Boating.

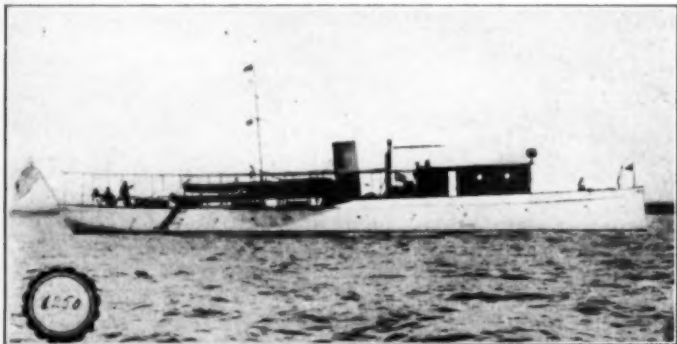
# COX & STEVENS

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1375 Broad

NAVAL ARCHITECTS  
AND  
YACHT BROKERS

15 William Street  
New York City

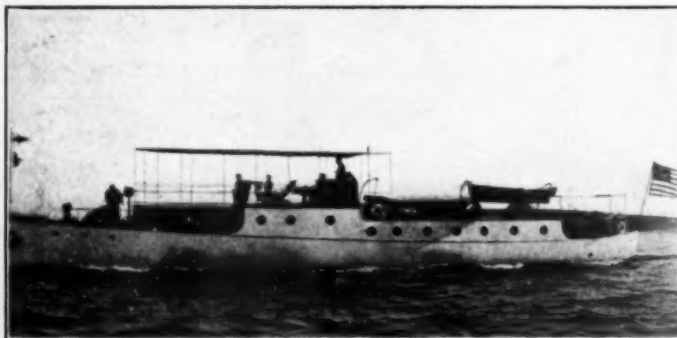
We offer for sale or charter all the available Steam Yachts, Auxiliaries, Motor Boats, House Boats, and Sailing Yachts that are in the market here and abroad. If you will write us, stating your requirements, we will mail you full information.



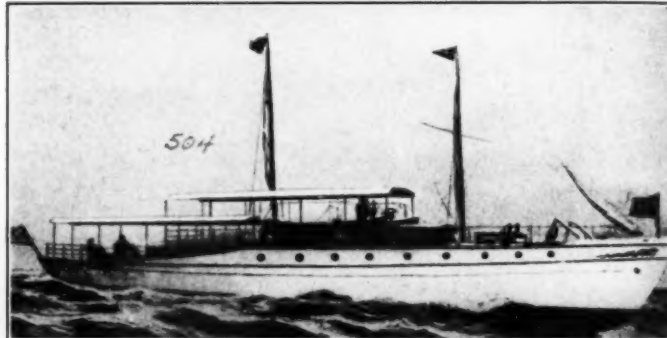
No. 1250.—Modern 110 ft. twin screw power yacht; four staterooms; all conveniences.  
*Please mention MOTOR BOATING.*



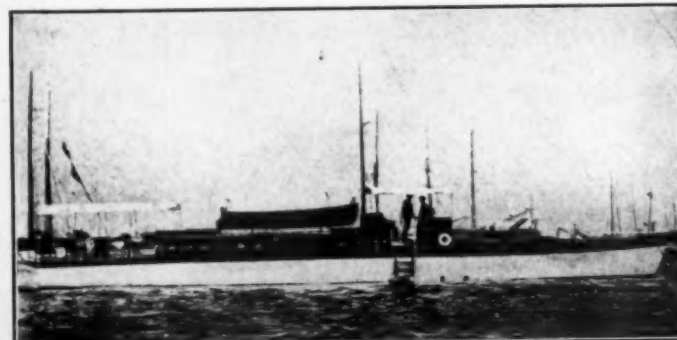
No. 603.—Splendid 85 ft. twin screw power yacht; speed 12-14 miles; Standard motors.  
*Please mention MOTOR BOATING.*



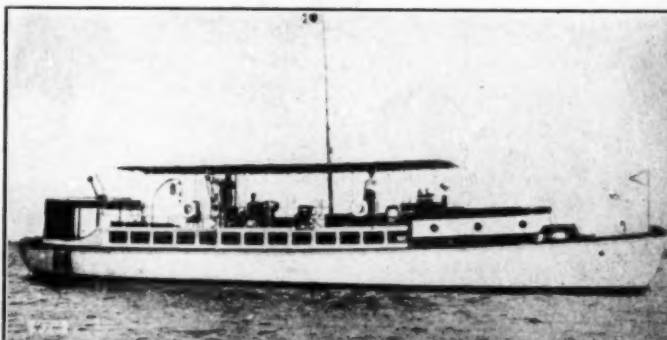
No. 175.—86 ft. motor yacht; very seaworthy. Low figure will be accepted, as owner is building larger from our designs.  
*Please mention MOTOR BOATING.*



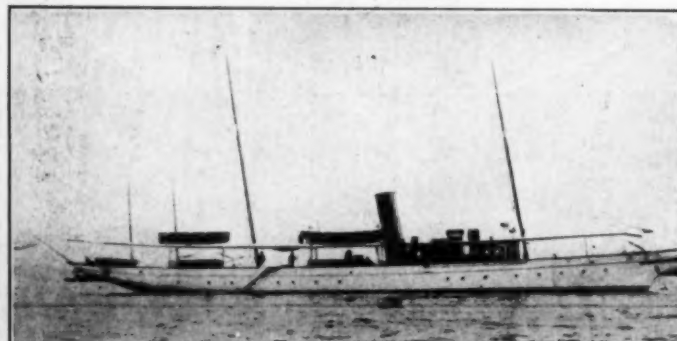
No. 504.—For sale or charter—75 x 17 ft. twin-screw, raised-deck cruiser large accommodation; speed 10-12 miles.  
*Please mention MOTOR BOATING.*



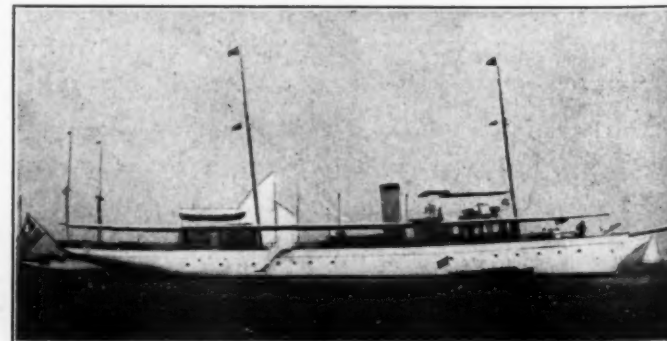
No. 297.—Exceptional bargain; 75 ft. fast motor yacht; speed 13-16 miles; double stateroom, large saloon, bath, etc.  
*Please mention MOTOR BOATING.*



No. 474.—Unusual bargain; 70 ft. motor yacht; 40-50 H. P. Globe; very roomy, able craft.  
*Please mention MOTOR BOATING.*



No. 57.—For sale and charter—Modern steel steam yacht; 140 ft.; fast and in good order. Price low.  
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No. 154.—For sale and charter—New 130 ft. steam yacht; two deckhouses; unusual accommodations. Attractive price.  
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# FRANK BOWNE JONES, Yacht Agent

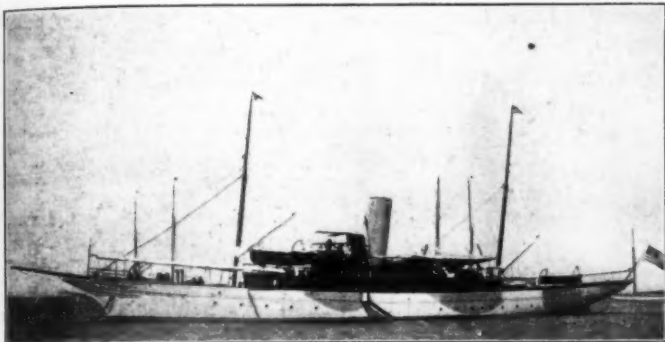
## 29 Broadway, New York

All the better Yachts available for sale and charter.

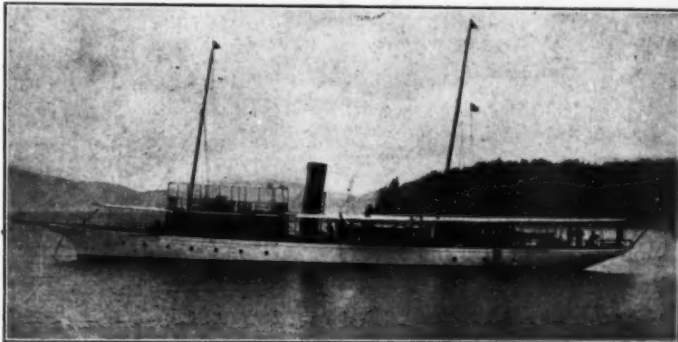
MORGAN BARNEY, Naval Architect

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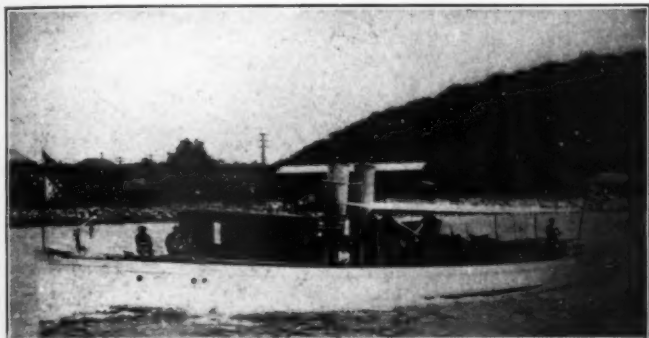
LET US KNOW YOUR REQUIREMENTS



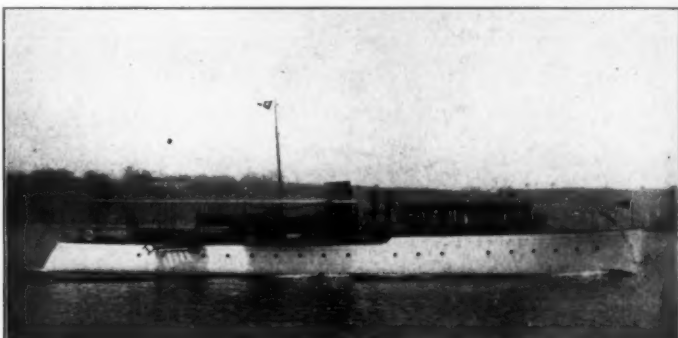
No. 1.—200 ft. ocean-going steam yacht; best of her type; available for purchase or charter. Particulars from Frank Bowne Jones, Yacht Agent, 29 Broadway, New York.  
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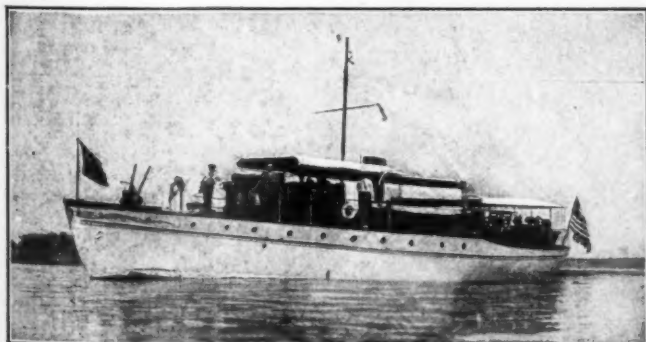
No. 2.—150 ft. steel steam yacht; good speed; excellent accommodations; for sale or charter. Particulars from Frank Bowne Jones, Yacht Agent, 29 Broadway, New York.  
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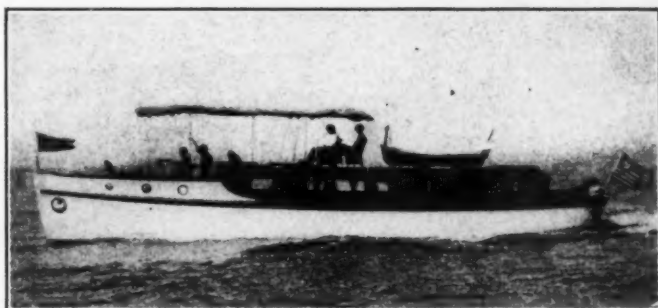
No. 3.—100 ft. "express" steam yacht; best build; high speed; for sale or charter. Particulars from Frank Bowne Jones, Yacht Agent, 29 Broadway, New York.  
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No. 4.—100 ft. modern gasoline cruiser; built last year. Particulars from Frank Bowne Jones, Yacht Agent, 29 Broadway, New York.  
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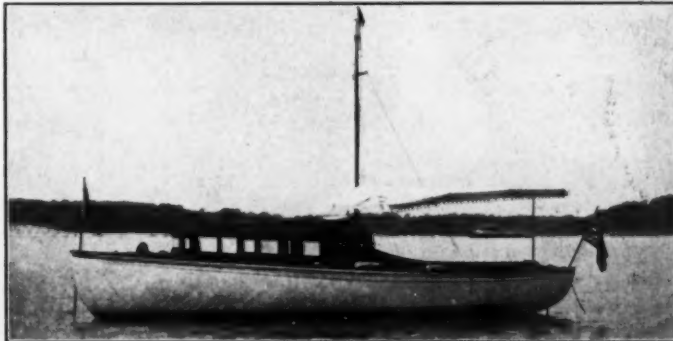
No. 5.—75 ft. gasoline cruiser; twin screw Standard motors. Particulars from Frank Bowne Jones, Yacht Agent, 29 Broadway, New York.  
*Please mention MOTOR BOATING.*



No. 6.—50 ft. gasoline cruiser; six-cylinder Speedway motor; attractive price. Particulars from Frank Bowne Jones, Yacht Agent, 29 Broadway, New York.  
*Please mention MOTOR BOATING.*



No. 7.—32 ft. trunk cabin cruiser; built last year; four-cycle motor. Particulars from Frank Bowne Jones, Yacht Agent, 29 Broadway, New York.  
*Please mention MOTOR BOATING.*



No. 8.—30 ft. trunk cabin launch; three years old; four-cylinder, four-cycle motor. Particulars from Frank Bowne Jones, Yacht Agent, 29 Broadway, New York.  
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# A. J. McINTOSH YACHT AGENCY

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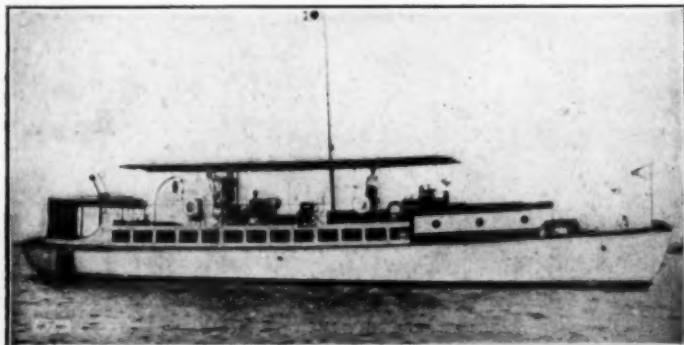
NEW YORK CITY

32 Broadway

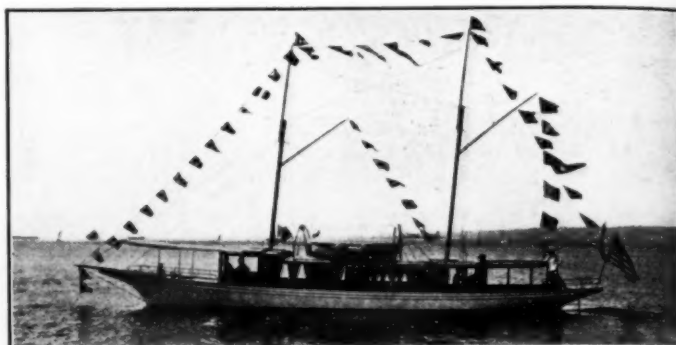
Highest Grade Yachts of All Types For Sale or Charter —  
Motor Boats — Steam — Sailing Craft

Correspondence Invited

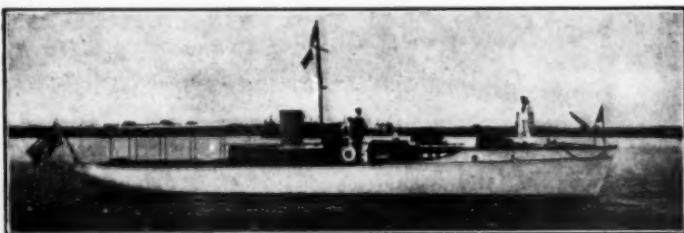
Descriptions Furnished



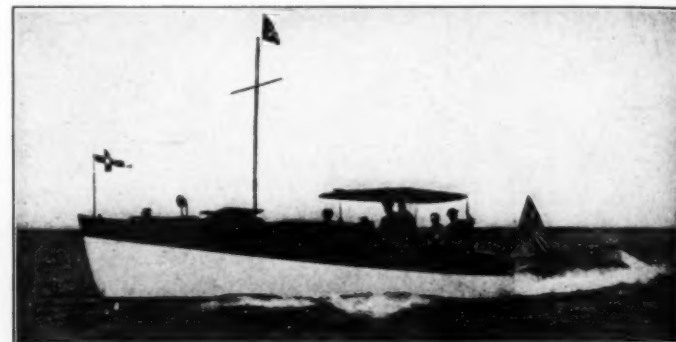
No. 8051.—70 x 66 x 12.3 x 3.6; 30 H. P. Globe; unusual opportunity.  
Please mention MOTOR BOATING.



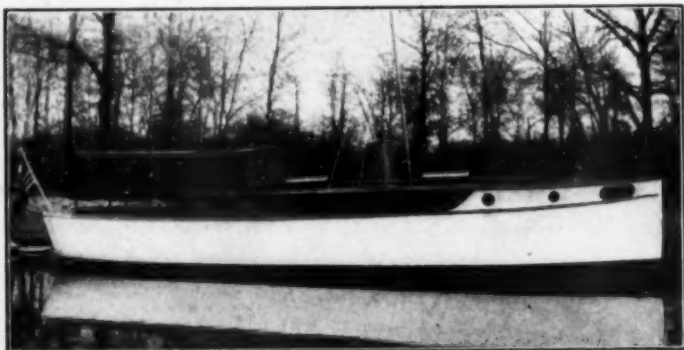
No. 8054.—67 x 10.6 x 3; 40 H. P. Standard; now has rail around entire top of house; good passenger boat; accommodates 40 outside; 30 inside.  
Please mention MOTOR BOATING.



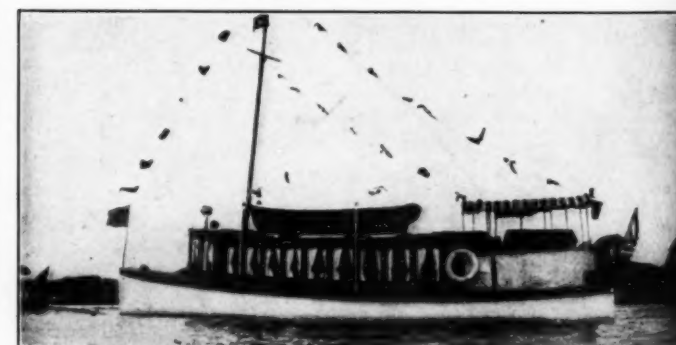
No. 755.—62 x 55 x 10.2 x 3; 40-50 H. P. Standard; 1910; A1 condition.  
Please mention MOTOR BOATING.



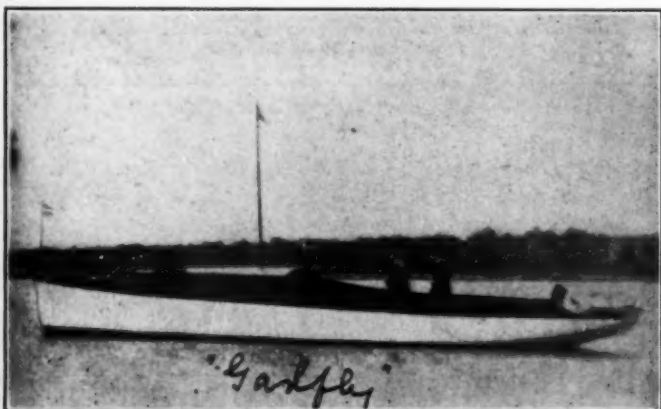
No. 741.—36 x 7.6 x 2.8; 1909; 45 H. P. motor; speed 12 miles; good as new.  
Please mention MOTOR BOATING.



No. 688.—45 ft. x 10.6; 30-40 H. P. motor; price very low.  
Please mention MOTOR BOATING.



No. 376.—45 x 10 x 3; 25 H. P. Standard; recently overhauled. Price reasonable.  
Please mention MOTOR BOATING.



Gadfly.—44 x 8.6 x 2.10; 18 H. P. Standard; thoroughly overhauled this year; delivered in commission; excellent bargain.  
Please mention MOTOR BOATING.



No. 3809.—48 ft. steam launch; heavily constructed; excellent condition; exceedingly low price.  
Please mention MOTOR BOATING.

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# Gas Engine & Power Company and Charles L. Seabury & Company

CONSOLIDATED

MORRIS HEIGHTS :: NEW YORK CITY

## Second Hand Steam and Motor Boats for Sale



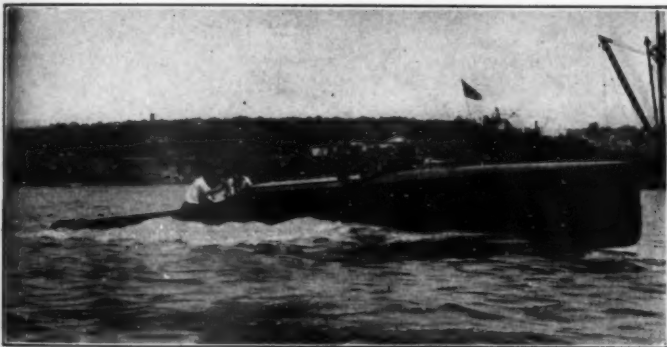
Raised deck cruiser; length 30 ft.; beam 7 ft. 6 in.; draft 2 ft. 2 in. Designed and built by Gas Engine & Power Co. and Charles L. Seabury & Co. (consolidated), Morris Heights, New York City. Delivered January 10, 1910. Speed, 9 to 10 miles per hour. In general.—This is an ideal cruiser for three persons—having stateroom with wide berth, and berth in engine room. Toilet and galley. Cockpit very roomy with stationary wood roof and side curtains. Glass wind shield at after end of cabin house. Boat is lighted throughout with electricity, having dynamo and storage batteries. Machinery.—Engine is a 4-cylinder, 4-cycle,  $4\frac{1}{2}$  x 5 in. speedway, 18-22 H. P., arranged for one man control. Fully found and furnished. Fine order throughout.

Please mention MOTOR BOATING.



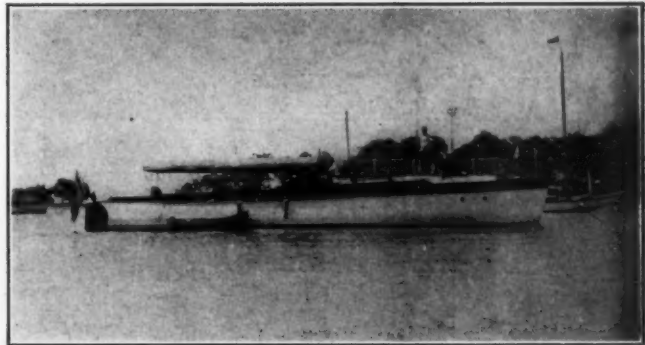
Raised deck cruiser, 44 ft. over all, 38 ft. water line, 9 ft. 6 in. beam, 3 ft. draught. Designed and built by us in 1910. Steersman's platform on starboard side, with controls to motor on steering wheel; reverse lever located at this point. Cockpit left open for chairs; thwart seat at after end of cockpit. Awnings and side curtains for cockpit. Boat is lighted with acetylene gas, Commercial Co. system. Machinery: Machinery consists of a 4-cylinder, 4-cycle, 6 x 6 in. Speedway gasoline marine engine, 32-40 h. p. Copper fuel tank, 200 gals. capacity. Speed of the boat is between 10 and 11 miles per hour. Is an elegant sea boat, having been used all summer in vicinity of Block Island. This is without question the best raised deck cruiser of the size that is available, and is only offered, as owner is contemplating having a larger "Speedway" boat built. Must be seen to be appreciated. Fully equipped.

Please mention MOTOR BOATING.



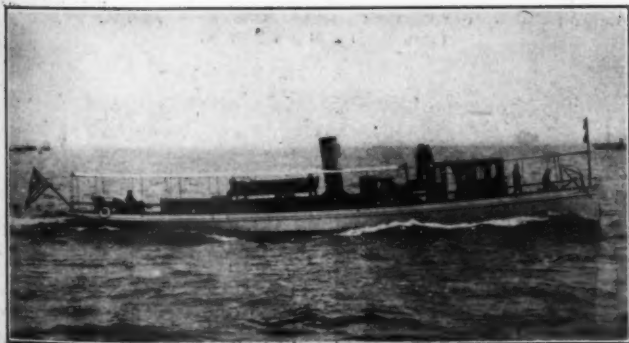
Open motor boat, speed type, 39 ft. 4 in. over all, 5 ft. 4 in. beam. Designed and built by us 1909. Speed, 20 to 25 miles per hour. Hull planked and finished in mahogany. Varnished inside and outside. Equipped with 6-cylinder, 6 $\frac{3}{4}$  x 8 in. Speedway gasoline engine with Bosch double ignition—both high and low tension systems. Arranged for one man control. Can seat comfortably six persons, and is the best launch of its kind ever turned out. Has had very little service and will be delivered in fine order at Morris Heights.

Please mention MOTOR BOATING.



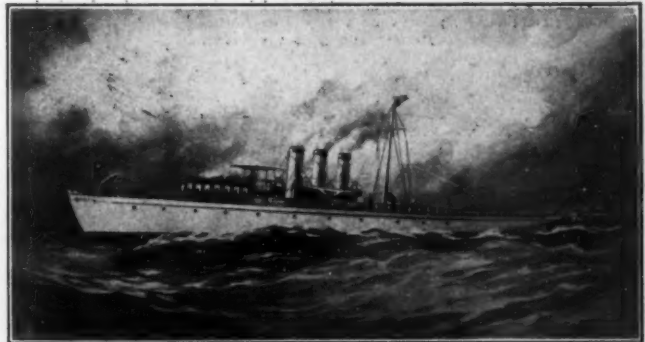
Motor boat, "raised deck type," 35 ft. long, built by Matthews Boat Co. in 1910; has toilet, galley, cabin and motor room; extra large cockpit; equipped with 6-cylinder, 6 $\frac{3}{4}$  in. x 8 in. "Speedway" gasoline engine, (Special) 125 H. P.; arranged for one-man control; electric lights; fully found; speed 17 to 18 miles per hour; a very attractive boat; specially adapted for day service.

Please mention MOTOR BOATING.



Twin-screw, light-draft steam yacht, 83 ft. over all; has large saloon, double stateroom, deck dining room, bridge, etc.; two triple-expansion engines and "Seabury" water tube boilers; electric lights, etc.; boat and machinery in good order, subject to closest inspection.

Please mention MOTOR BOATING.



High-speed twin-screw steam yacht, 137 ft. over all. Designed and built by us in 1909. Equipped with two "Seabury" triple-expansion engines and "Seabury" water tube boilers; fully found; fine order throughout; speed guaranteed 30 miles per hour; fastest steam yacht now available.

Please mention MOTOR BOATING.

All of the above boats can be seen at our works. Further particulars, plans, etc., will be forwarded to those interested. Inspection of these boats is invited. We have a number of other second-hand craft of various styles and sizes for sale.

# RELIANCE MOTOR BOATS

Construction Without an Equal

Speed Greatest Obtainable

**The Reliance  
Motor Boat Co.**  
*Builders and Designers*

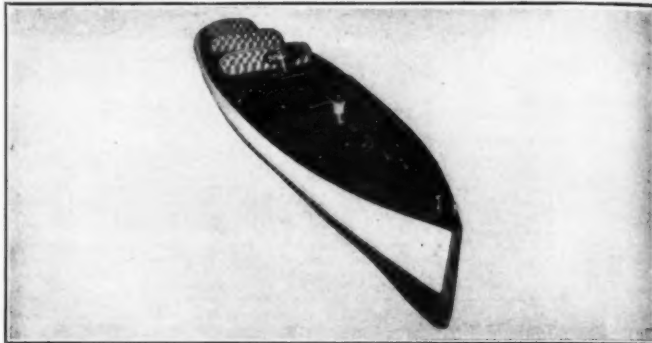
Offer several of our own magnificent product taken in trade from parties for whom we built more elaborate outfits. Also owners' boats on storage: Cabin cruisers, day cruisers, Runabouts. Write us. We can supply your wants.

**210th Street and  
Harlem River**  
**New York City**  
Telephone 84 Audubon



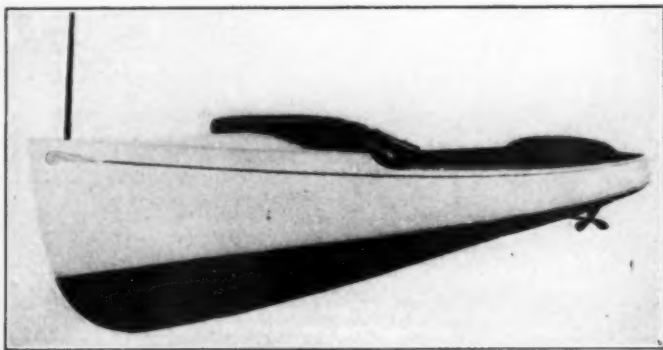
No. 60.—All mahogany, equal new; luxurious appointments; motor 35 H. P.; lines same as famous Peter Pan III; complete equipment; \$1,850; value \$2,700; speed 23 miles.

*Please mention MOTOR BOATING.*



No. 43.—Magnificent 16 ft. yacht tender or runabout; 2-cyl., 10 H. P. Roberts motor; rear starting device; mahogany decks, motor hatches, coaming and interior; upholstered lazy-backs; beautifully finished and furnished; electric lights; auto controls; used one month; really new. Sell half cost.

*Please mention MOTOR BOATING.*



No. 51.—25 x 5 runabout; mahogany decks and interior; 4-cylinder Stamford motor; roomy; comfortable; prime condition; will be sacrificed for \$600; worth \$1,000.

*Please mention MOTOR BOATING.*



No. 65.—Pelican, 28 ft. x 4 ft. 2 in.; model and lines identically same as famous Peter Pan II; auto speed runabout; beautiful mahogany decks and interior; mahogany lazy-backs; 4-cylinder Mercury; speed 21 miles. Great bargain, \$1,300.

*Please mention MOTOR BOATING.*

NO. 57.  
THE RELIANCE "TWENTY," new auto speed runabout; 21 ft. long, 4 ft. beam; 4-cylinder Stamford motor, 20 H. P.; Bosch magneto; rear starting device; auto wheel with controls.  
LINES LIKE FAMOUS PETER PAN III.  
\$925.



*Please mention MOTOR BOATING.*

Beautiful mahogany decks. Mahogany hatches over motor. Water-tight compartment. Magnificent furnishings and fittings. Highest grade construction. Everything up to date.

A REAL SENSATION.  
SPEED 20 MILES PER HOUR.  
Write for particulars.



Showrooms:  
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# BRUNS KIMBALL & CO., Inc.

*The Largest General Marine Agents and Yacht Brokers*

Telephone 3218 Cortlandt

High Grade Yachts and Launches for Sale or Charter.

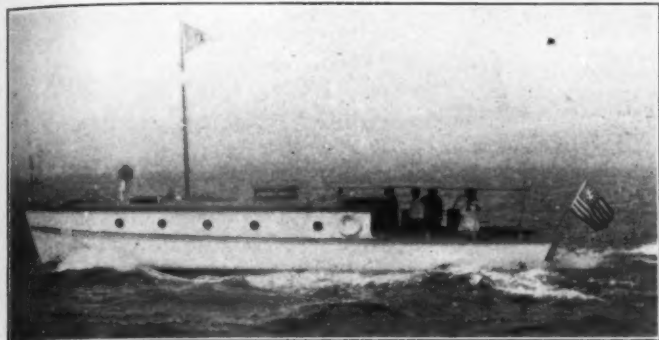
Over 2000 listed.

WE CAN REFER YOU TO OVER  
1000 SATISFIED CUSTOMERS

IF YOU DESIRE TO DISPOSE OF YOUR YACHT, LAUNCH  
OR ENGINE IT WILL BE TO YOUR ADVANTAGE TO  
COMMUNICATE WITH US IMMEDIATELY

134 Liberty Street  
New York City

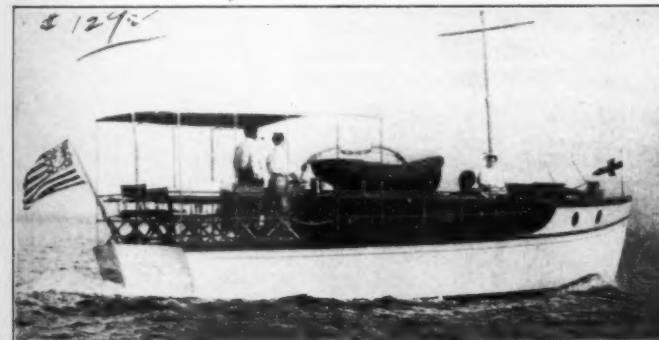
OUR BEST ADVERTISER IS A  
SATISFIED CUSTOMER



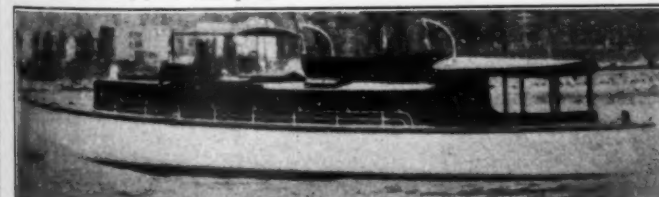
1145—40 x 9 x 3; built 1908; state room, main saloon; every cruising accommodation; 25 H. P. Clifton engine. Price \$2,500.



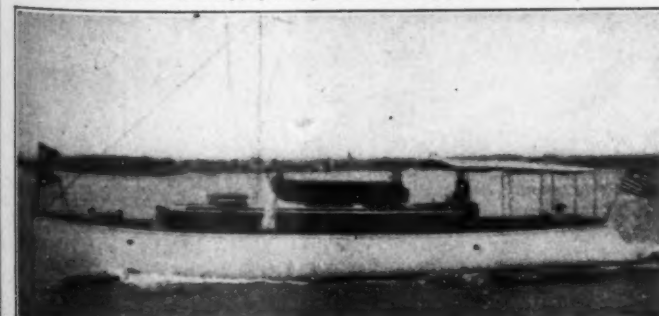
1975—50 x 10 1/2 x 3; beautiful mahogany cabin; every cruising accommodation; completely equipped; 40 H. P., 4 cylinder, 4 cycle, 1909 model, Continental engine. Price \$2,100.



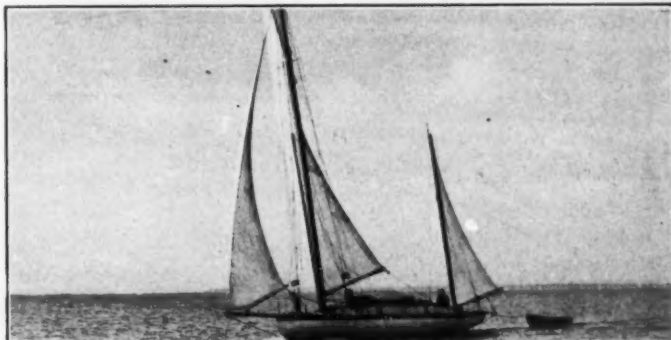
1292—37 x 8 1/2 x 30 inch; brand new; 4 ft. bridge with bridge control; main saloon, state room, 8 ft. after deck; 40 H. P., 6 cylinder, 4 cycle engine forward; speed about 12 miles. Price \$1,800. Act quick.



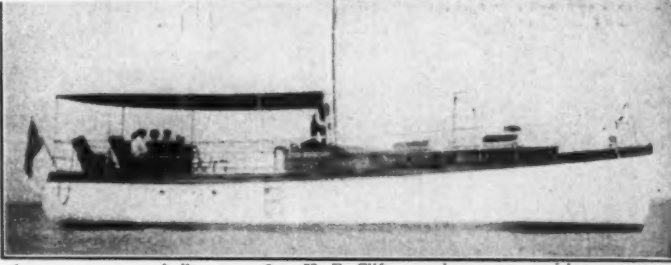
1342—61 x 11 x 3; built by New York Yacht, Launch & Engine Co. 1908; 70 H. P., 6 cylinder, 20th Century; speed 15 miles. Asking \$6,000. Want offer.



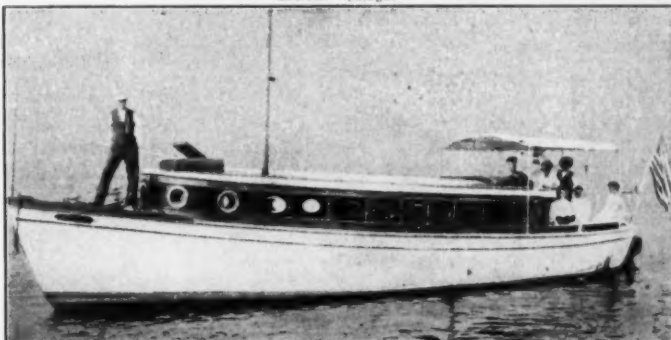
23—50 x 10 1/2 x 3; built 1907; every cruising accommodation; 30 H. P. Craig engine; speed 13 miles. Price \$5,500.



1531—38 1/2 x 12 x 26 inches; built by Kirk, 1906; every cruising accommodation. Price \$1,000.



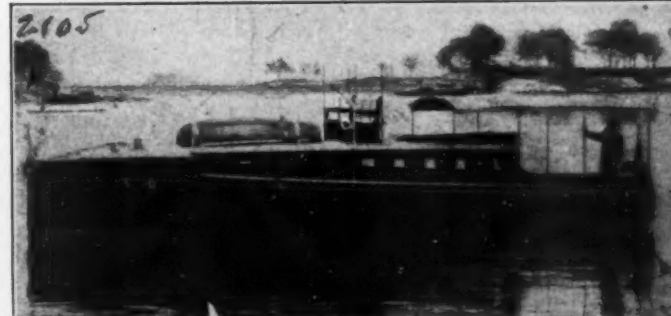
1607—50 x 12 x 3; built 1907; 28-35 H. P. Clifton engine; every cruising accommodation. \$2,250.



1420—40 x 9 x 3; built 1908 by New York Yacht, Launch & Engine Co.; 20 H. P. 20th Century engine; fully equipped. Price \$2,500.



1275—35 x 9 x 3—Built 1908; 6 ft. head room, toilet, lavatory, galley, etc.; electric lighted; completely equipped; 20 H. P., 4 cylinder, 4 cycle engine. Price \$1,000



2105—40 x 10 x 3; built 1908; 10-25 Standard engine; bath room; every cruising accommodation. \$3,200.

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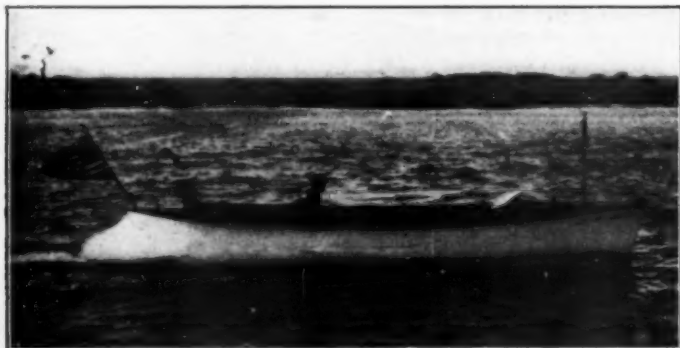
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Cut one inch deep, one column wide.....\$2  
Cut two inches deep, two columns wide.....\$3  
Cut three inches deep, three columns wide.....\$10

**Opportunities  
for the  
Motor Boatman**

Before you buy or before you sell examine the exceptional buying and selling opportunities under this heading. They comprise the best offers of the month. Please mention Motor Boating.



FOR SALE—Motor boat, practically new, beautiful speed lines; 26 ft. long, 3 ft. 6 in. beam; Fay & Bowen engine; carry nine people 12 miles hour. Bargain quick cash sale. Apply Jones, care Norwood, 425 N. Massachusetts Ave., Atlantic City.



¶ When a magazine shows a steady increase in amount of advertising carried and in number of advertisers, there must be a reason for such growth which warrants a careful consideration of that publication by manufacturers not yet advertising in it.

¶ MoToR BoatinG shows a continued gain every month over the corresponding month of the previous year; for example:—

¶ MoToR BoatinG in March, 1910, had 183 advertisers, and in March of this year 249 advertisers—an increase of 66 advertisers, or 36 per cent.

¶ Then, in advertising carried, MoToR BoatinG increased from 29,988 lines in March, 1910, to 44,856 lines in March, 1911,—a gain of 14,868 lines, or nearly 50 per cent.

¶ This increase shows that advertisers find MoToR BoatinG a result producer. It is evident on the face of it that such a picked list of interested people as are MoToR BoatinG's readers ought to bring sales.

### Metal Stamping

METAL STAMPING for the motor boat industry. Metal goods of all kinds; drop-press and punch work; cold bending; engraving; steel stamps; letters and figures; die sinking, etc. Send today for literature. The Chandler Co., Inc., Springfield, Mass.

### Special Announcements of the Trade

#### ACCESSORIES.

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American Commercial Corp., 110 West Street, New York City.  
Cell Drier Machine Co., Taunton, Mass.  
Fowler Lamp & Mfg. Co., 57 East 24th Street, Chicago, Ill.  
Phoenix Paint & Varnish Co., 124 Market Street, Philadelphia, Pa.

#### PARTS.

The Dunbar Brothers Co., Bristol, Conn.  
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#### COTTON, DUCK CANVAS.

Lowell Weaving Company, Lowell, Mass.

#### WATERPROOF CLOTH.

Fabrikoid Works, Newburgh, N. Y.

#### IGNITION.

Fahnestock Electric Co., 129 Patchen Ave., Brooklyn, N. Y.

#### BOAT BUILDERS.

Kyle & Purdy, Inc., City Island, N. Y.

#### MOTORS.

Acadia Gas Engine Co., Ltd., Bridgewater, Nova Scotia.

#### FLAG POLES.

Novelty Manufacturing Co., Waterbury, Conn.

#### METAL STAMPING.

The Chandler Co., Inc., Springfield, Mass.

### To Buy or to Sell a Boat—

RACING OR CRUISING POWER BOATS, LAUNCHES, HOUSE-BOATS, ROWBOATS, CANOES, ANY KIND OF CRAFT, ENGINES, ACCESSORIES, PARTS OF BOATS, ETC., TRY

#### MoToR BoatinG Market Place

If you want an opportunity to buy something at a bargain—

A boat of any kind from a racer to a cruiser, from a launch to an ocean-going power boat, or from a houseboat to an auxiliary;

If you want to sell a boat of any kind; MoToR BoatinG's Classified Advertising Pages are where the opportunity hunters meet.

Today—now—publish your wants in the

**OPPORTUNITY PAGES  
of MoToR BoatinG**

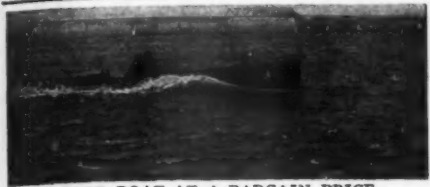


## THE MOTOR BOATING MARKET PLACE

The rate for "For Sale" and "Want" advertisements is 5 cents per word. If an illustration is used the charge is as follows, which includes the making of the cut:  
 Cut one inch deep, one column wide..... \$2  
 Cut two inches deep, two columns wide..... \$3  
 Cut three inches deep, three columns wide..... \$10

### Opportunities for the Motor Boatman

Before you buy or before you sell examine the exceptional buying and selling opportunities under this heading. They comprise the best offers of the month. Please mention Motor Boating.



#### A GOOD BOAT AT A BARGAIN PRICE.

24 ft. x 4 ft., equipped with 24 H. P. Fairbanks-Morse engine; speed 21 miles; first-class condition. A bargain. Fairbanks, Morse & Co., Louisville, Ky.

WE HAVE the following slightly shopworn and slightly used engines with Schebler Carburetor and complete salt water equipment:

4 1/2 H. P. 1909 Eagle, brand new and a splendid value; \$70.00.

4 H. P. Mianus, slightly used, but in splendid condition; \$50.00.

7 H. P. Union, slightly used, but in good condition; \$72.00.

These are all Make and Break, and are strong, serviceable engines. Eagle Company, 98 Warren Street, Newark, N. J.

ENGINE FOR SALE—3 H. P. Thrall; good as new. With complete equipment for running boat. High speed, light weight; \$35. J. E. Ostrander, Staatsburg, N. Y.

WANTED—A foreman who thoroughly understands assembling of marine motors; must be a high-class man in every respect. Address, with complete details, Marine, care of MOTOR BOATING, 381 Fourth Ave., New York.

FOR SALE—Truscott motor boat, 45 x 9 ft., 32-inch draft, three-quarter cabin, large after cockpit; canopy top; electric lights; 35 H. P. 4-cylinder Truscott gasoline engine; six comfortable berths; large mahogany ice box; toilet room; medicine chest; upholstery green plush; tan silk curtains; brass running lights and searchlight. Also extra heavy, strong boat house. Used only one season. Chas. V. Brecht, 1201 Cass Ave., St. Louis.

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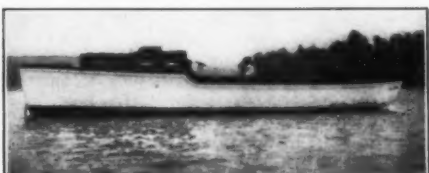
WILL SELL CHEAP FOR CASH a 30 ft. by 5 ft. launch, seating capacity fifteen persons; planking 1/4 inch cedar decks, black cherry, cockpit sealed and finished in black walnut, lockers and cushions, four cylinder Leighton engine, 12 H. P.; all in good order. C. W. Joles, R. D. No. 1, Clayton, N. Y.

FOR SALE—Unused \$15.00 spray-hood, \$8.00. Oscar Smith, Wilkes-Barre, Pa.

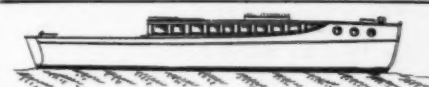
FOR SALE—22 ft. Toppan Dory, 5 H. P. motor; good condition; complete with accessories. Price \$200. J. F. Wallace, 165 Broadway, or Capt. C. S. Wallace, Bedloe's Island.

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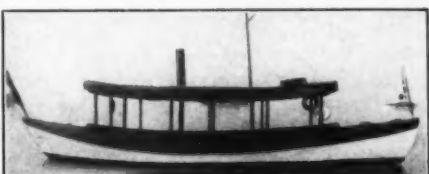
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Very desirable power boat, 27 x 32 x 8 x 3. Built 1908. 17 H. P. "Leader" engine, 2 cylinder, 4 cycle horizontal. Strongly built; cedar planking; mahogany trim; completely equipped. Has toilet, porcelain wash basin, large water tank, awning with canvas top and sides, cushions for cabin and cockpit. Will sell very reasonably. Apply owner, T. B. Bleecker, 236 Greenwich St. Phone 2960 Cortland.



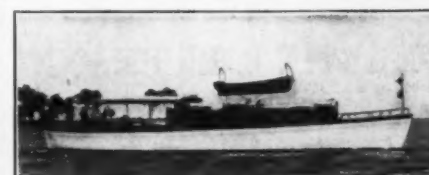
For Sale—New outside cruiser at low price. 53 ft. long x 12 ft. beam x 4 ft. draft. Very strong construction and very best material. Planking Georgia pine and keel and frames white oak. Frames spaced 8 inches apart. Cabin finished outside in selected Pulman car walnut. No inside work done. Send for photographs and full description. Price \$1,800, worth \$2,500. Apply to Joseph W. Hopkins, Boat Builder, Dixondale, Va.



FOR SALE—30 ft. 4 in. long, 8 ft. beam; whale boat type motor boat; speed about 9 miles; first class condition. Dr. J. H. Branth, 183 West 87th Street, New York.



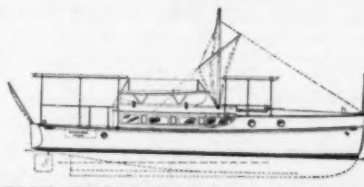
OR SALE—A first-class, comfortable and seaworthy family boat, 25 ft. x 6 x 2, used during the season of 1910; planking 1/4 in. cypress, copper-fastened over burrs; white oak frame; coaming and sheer strake 1/4 in. quartered oak; cabin and cockpit paneled quartered oak, rub finish; windows drop in pockets; front windows circular; Sands toilet; 15-20 B. F. Brown 3-cyl. engine; under-water exhaust; reversible propeller; search and running lights; 1 in. brass rails, anchor, etc.; speed 11 miles. Price, including 10 ft. cypress dink, \$900. Will repaint hull and put in commission. Address D. J. McIntyre, 300 James St., Syracuse, N. Y.



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ENGINE WANTED—About 8 H. P. Will trade 26-foot cruiser frames. Harry Felling, 707 Commercial, Atchison, Kan.

FOR SALE—Sacrifice, twenty-two foot speed-boat; motor, six horse "Gray"; reliable, roomy, seaworthy; speed, twelve actual miles. Edward P. Culver, Hudson Falls, N. Y.

WANTED—Agents—Good live active agents to sell Clifton Engines. The simplest, most accessible engine made. Clifton Motor Works, 261 East Clifton Ave., Cincinnati, O.

20 ft., 2 H. P. power canoe; built 1910; Schebler carburetor; perfect condition; cost \$260. What offer? Pitman, 316 West 93rd St., New York.

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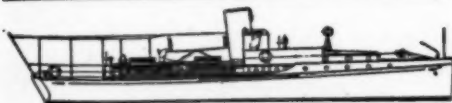
FOR SALE—Motor boat built by Kirk, Toms River, N. J.; 22 ft. 6 in. over all; 5 ft. 10 in. beam; draft 20 in.; 3 H. P. Globe engine (1907 model); hair cushions; spray hoods covering entire board; copper tank; brass trim; galvanized detached top; all in first class order; price \$400; cost \$850. Address J. W. H., Barnegat City, N. J.

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(Continued from page 12.)

continue under the remaining power while the repairs are made. Manipulation in congested waters is facilitated as turning is not dependent upon steerage way. The longitudinal space required for the engine room is less. With the triple installation, three separate cruising speeds are available, each at the most economical engine speed, for it is possible with such an arrangement to run on the middle engine alone, on the two wing engines and with all three. Due to the varying speed of the boat in relation to the constant pitch of the propellers, the engine speeds of these several combinations would, of course, vary somewhat, but the result would be more economical than changing the speed of a single engine through the wide range that would be necessary for a corresponding range of cruising speeds.

The efficiency of a triple installation depends considerably upon the design of the after part of the boat and upon the relative positions of the screws with regard to each other and the boat, but this is a problem for the architect rather than for the engineer.

While the double acting principle cuts the overall length of a motor in half the comparatively small number of them in use would seem to indicate that their disadvantages in the way of complications, more than overbalance their advantages, and getting down to the question of distributing our total horse power it seems advisable to divide this among three units of six cylinders of the size decided upon, or for smaller powers, two units of the same number and size of cylinders.

## Kerosene Motors for China.

Consul General Amos P. Wilder, at Shanghai, has called attention to the demand for boats with kerosene motors in China, where gasoline is scarce and expensive. The Asiatic Petroleum Company recently built a 66-foot boat at Shanghai, which was equipped with two 50 h. p. kerosene motors of English make. Another launch has been built to take a 30 h. p. motor.

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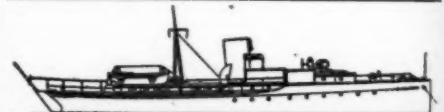
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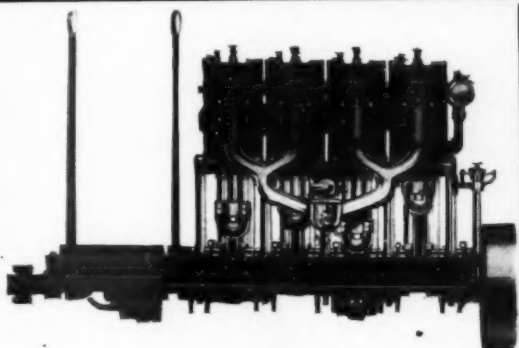
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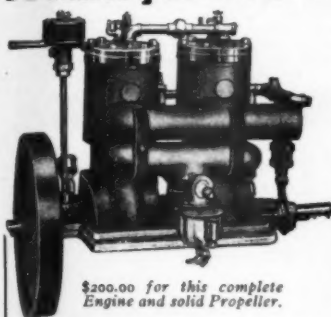
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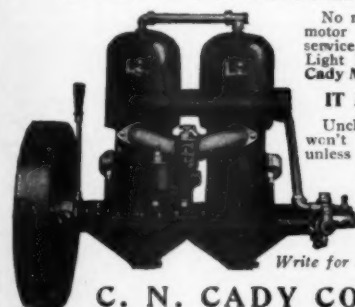
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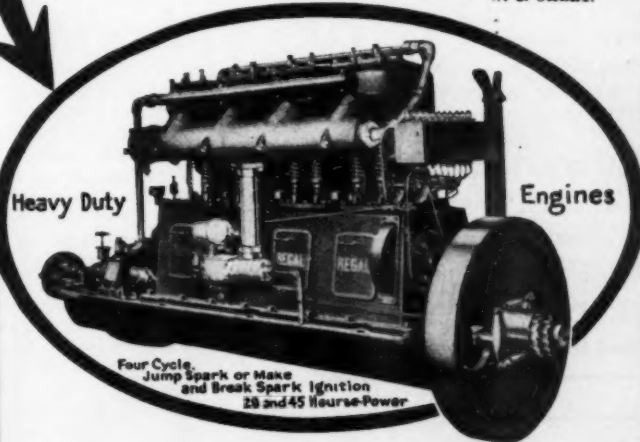
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Gentlemen—I have installed the 18 H. P. Regal Engine in a new boat, the "Katie B." 36 feet by 4 feet, and it is giving perfect satisfaction. In a recent race held here, "Katie B." made an excellent showing. The race was over a four-lap course of 12 miles and we finished before any of the others had completed their second lap.

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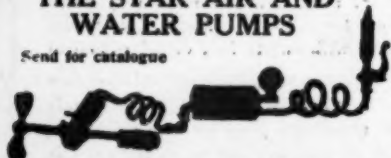
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## Boats at Monaco Meeting.

(Continued from page 5.)

a fine but shallow displacement type of bow merging into an oval section and gradually opening out until it becomes absolutely flat astern. The hull design is one which was introduced last year by Despujols in some of the Gregoire boats, and proved so successful that it has been adopted this year by the same builder for all but two of his boats.

Kangaroo can only be regarded as a toy, and in view of its small power one wonders why it has been entered as a big racer. It is merely a 20-foot flat-bottomed punt carrying a light four-cylinder Anzani aviation motor.

There is a greater possibility of interesting work being done by M. Fabre's Goeland, which is a combination of the hydroplane and the aeroplane. The Fabre machine is practically identical with a very successful type of aeroplane built for Louis Paulham and designed to start from and land on the surface of the water. To fit it for the boat races the designer has clipped the wings to such an extent that the machine cannot fly, and yet will have sufficient lifting power to cause the three big floats to skim over the water.

From a racing standpoint there is very poor representation in the fifth cruiser series, for at least five of the eight entries are very slow-going cabin cruisers, and the fastest boat is Cocorico II, a last year's craft now running as a cruiser, a limited and an unlimited racer. The only new boat is La Quise, a pleasing looking cruiser, fitted with a Mercedes motor of 140 by 155 millimetres bore and stroke, which is quite sufficient for a cruising gait, but insufficient for racing.

In the fourth class of cruisers, limited to 40 feet overall, the two most interesting boats are Sigma-Labor and Labor V, already mentioned in connection with the first racer class, for this is another case of one boat being allowed to run in more than one class. The only other outstanding boat is the German Lursen-Daimler, a peculiar type of hydroplane, having a displacement type of bow, quickly merging into an absolutely flat bottom with greatest width at the stern and no draught astern, for the rounded off deck is swept down until it meets the bottom at a knife edge on the water line. It is very doubtful if the boat will be able to make a showing in anything but absolutely smooth water.

Out of twenty-five boats in the third series, limited to 26 feet overall, the most prominent craft are Labor IV, a French production, and Pick Ase VII, a German production. Labor is another of the Despujols stepless hydroplane boats fitted with a Labor aviation motor. The German craft is similar to the Frenchman as far as the hull is concerned.

In the second series of 21-foot cruisers one of the novelties of the meeting is to be found in the three Gregoire hydroplanes designed by Despujols. Gregoire X and Gregoire XI are sister vessels; they are shallow stepless hydroplanes similar in main features to the Gregoire type introduced last year. But their motors are the most exaggerated type of long-stroke engine ever built in Europe. With a bore of  $3\frac{1}{2}$  inches they have a stroke of just a fraction under 12 inches, and as the valves are mounted in the cylinder heads, with overhead operating mechanism, the height of the motor above the gunwale of the frail looking boat is not less than 3 feet 6 inches. The total height of the motor is about 54 inches. By the adoption of the long stroke, unusually large valves, there being two per cylinder for the exhaust, very light reciprocating parts, and a high compression, it has been possible to run the motors at 2500 revolutions a minute and develop 290 horsepower, which is more than was available three years ago for most of the big racers. The third boat is practically identical so far as the hull is concerned, but has one of last year's motors with the modest stroke of  $7\frac{1}{4}$  inches.

The little cruisers are numerous but not interesting, the only outstanding boat being Hispano-Suiza, the hull of which has been designed on the same lines as those of the three Gregoire boats.

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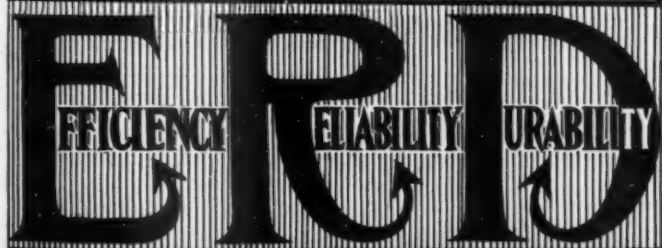


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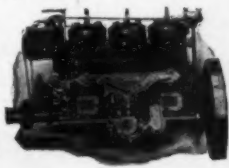
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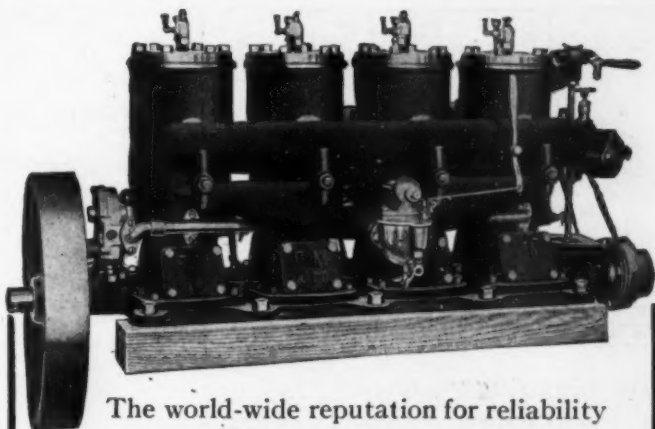
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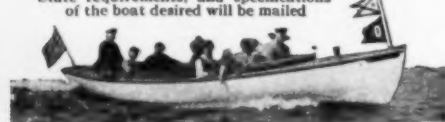
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## Yard and Shop.

(Continued from page 53.)

"When you consider that T & S made 119.18 statute miles at an average speed of 28.11 miles per hour, you will see that it is a wonderful performance; even more remarkable when you stop to think that this record was previously held by Courier at 27 miles an hour. The best time last year in the National race on the Hudson from New York to Poughkeepsie and return was made by Peter Pan 111. She averaged 21.43 miles an hour for 115 miles." It would seem that T & S is entitled to the long distance championship of the United States. She is a Florida-built boat, powered with a 100 h.p. Sterling engine.

### A Proof of Durability.

A. B. Sands & Son Company of 22 Vesey Street, New York City, recently received a call to replace a broken piece of gearing on one of the two pump water closets of the old yacht Shamrock, built at the yard of J. F. Munn, Brooklyn, in 1887. The Sands firm, which has been manufacturing marine sanitary fixtures and specialties for over 60 years, made and installed these closets on Shamrock nearly 25 years ago, and the fact that they are still in use and in good condition, seems strong proof of the durability of Sands fixtures.

### The Hyde Propeller on Lake Worth.

T & S, the winner of the Palm Beach Grand Prize race on Lake Worth, when she covered 119.18 statute miles at an average speed of 28.11 miles per hour, was equipped with a Hyde turbine type propeller, made by the Hyde Windlass Company of Bath, Me.

### Bridgeport Motors on Pacific Coast.

The Bridgeport Motor Company, Inc., of Bridgeport, Conn., has just completed an agency arrangement for the sale of Bridgeport motors on the Pacific Coast by the Doak Gas Engine Company of Oakland and San Francisco. The latter company manufacture four cycle motors in large powers, which are well known on the coast. Combining their own motors with the Bridgeports, they will have a representative line.

### Buoys that Stand Up to Their Work.

The Jordan Brothers Lumber Company of Norfolk, Va., say that they are having great success with their "Never Sink" mooring buoy. This buoy is turned from a solid piece of white cedar and contains an oil which makes it practically impervious to water. The buoy is unsinkable, and because of its shape stands up high out of the water so as to be easily reached from the deck, doing away with the exciting but sometimes exasperating game of fishing round with a boat hook for the ring of the buoy. The straps at top and bottom are of one-inch wrought iron, heavily galvanized, and bolted through with half-inch iron rivets. The buoy is thoroughly coated with red lead and oil, and the top painted with alternate red and white stripes.

### New Monitor Boat Factory.

The Monitor Boat and Engine Company, of Newark, N. J., builders of Monitor knock-down boat frames, have just taken possession of their new factory in Newark, 125 New Jersey Railroad Ave., and are at work on a large number of orders. The factory is reached by way of Mulberry St., from the South St. Station of the Pennsylvania R. R.

### General Distribution of Lubroleine.

Fiske Brothers Refining Company, 24 State St., New York City, announce that they have arranged for a more general distribution of their products, Lubroleine motor oil, Centaur graphite grease, etc., so that they can now be obtained in practically every important city. The Waterhouse & Lester Company are distributors for California, and in the East, Charles E. Miller will sell the Fiske lubricants from his twelve branch stores in eight states.

### Devco Paints and Varnishes.

The F. W. Devco & C. T. Reynolds Co., of 101 Fulton St., New York City, are manufacturing a number of special kinds of paints and varnishes particularly for motor boat use. Columbia Yacht White, which is designed for outside use, will not chalk, crack or peel, and is said to be the whitest of yacht whites. "Ver-nosite," a long-life spar varnish, is intended for use on spars, rails and decks and will not turn white under the action of salt water or blister in the sun. Other products particularly for motor boat use are a number of heat-resisting enamels and Devco Metallic Copper or anti-fouling composition for wooden bottoms.

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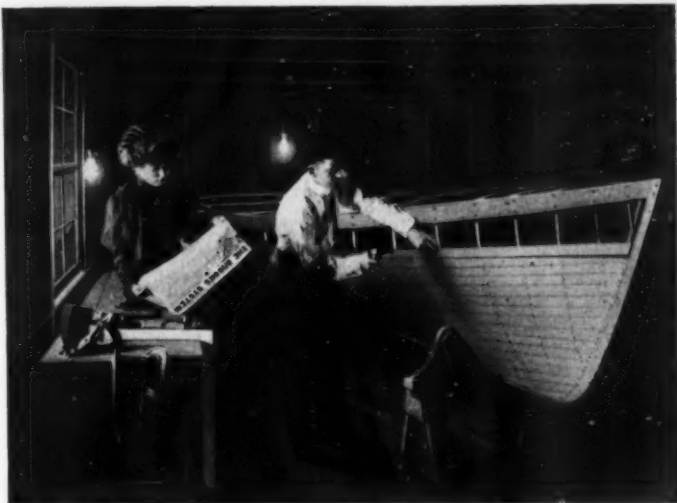
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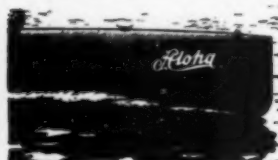
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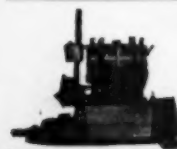


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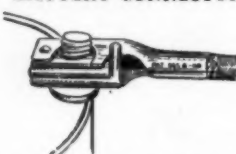
### STANDARD TERMINAL



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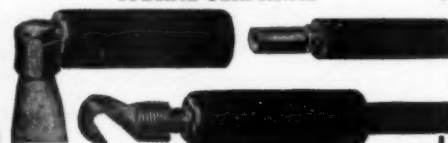
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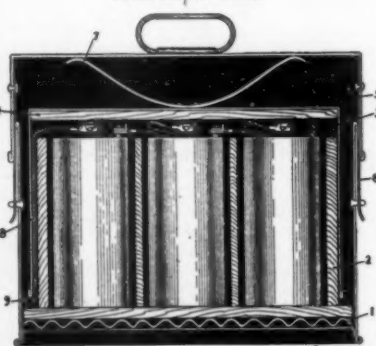
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It is not claimed for this box that it may be submerged without water entering it, but it does afford absolute protection from any amount of water that may descend upon it, and any amount of moisture that may collect below it; this is all that is necessary, for if a boat is submerged or going to sink, dry batteries will not help you.

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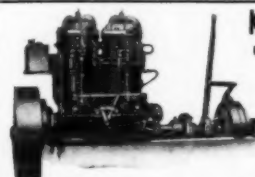
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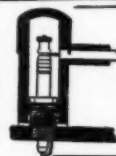
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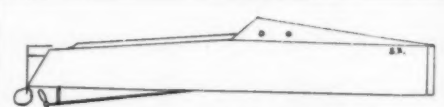
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**the S. X. Speedboat Co.,** Newburyport, Mass.  
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## Reliance Spark Plugs

Take less battery power than any other plug, and give the hot, concentrated spark that means an explosion every time. Write for booklet giving full details.

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No Adjustments No Springs  
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Haven't you had a feeling of envy for the man who has a good electric lighting system for his boat?

Why not equip your boat this season with the Dayton Launch Lighting System, and then really *enjoy* your boat.

Use your boat day or night and enjoy it *all* the time.

Your hand on the switch will flood the cabin with brilliant light, so you can chat with your friends in comfort, read books and papers, play a sociable game of cards, cook a meal, and get real service out of your cabin.

You can have electric bow and riding lights, a search light—all without oil, or matches, and without danger, dirt or discomfort.

With the Dayton outfit, the air is always clear and cool in the cabin—free from the fetid smell of oil lamps.

### Free Ignition

The Dayton Launch Lighting outfit is a complete, self-containing, self-operating system, that not only gives you all the light you can ever need, but it is a constant, ever-ready source for current of even voltage for ignition purpose.

It consists of our famous Dayton Dynamo, compact, oil and waterproof, run by a belt from your engine. It accumulates current in our Hubler-Dayton battery, known as the best storage battery for marine purposes made to-day.

This double source of current insures you against darkness or stoppage at all times. The outfit is complete with switchboard, meters, lights and wiring.

Write for our bulletin describing our lighting outfit, as well as our complete line of ignition apparatus.

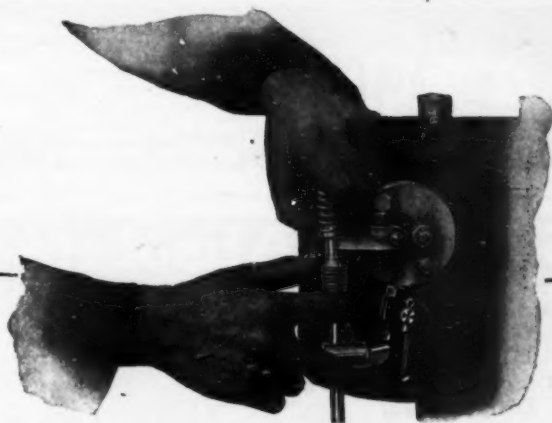
### The Dayton Electrical Mfg. Co.

Largest Manufacturers of Ignition and Lighting Apparatus exclusively in the world

188 St. Clair St. Dayton, Ohio

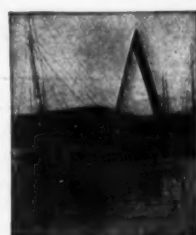
#### Our High Voltage Arc Searchlight

We have a new high voltage 1500 c. p. arc searchlight outfit by means of which you can navigate anywhere in safety, and pick up docks and landings just as well as in lightest noon-day. We have published a special bulletin on this searchlight and outfit, which we will send free if you will write for it.



The "Automatic" Igniter will work under ANY climatic condition or location or slant of the engine. There is only ONE removable part to it—a simple little plug. This is a distinct triumph in construction of which we are justly proud. This plug fits a hole, communicating with upper part of the Cylinder, where rise the most powerful gases. This insures INSTANT ignition and therefore starts the engine instantly, a feature remarked upon by all its users. The plug is seated all around, making a gasket unnecessary. The igniter rod can be snapped on or off the igniter without removing a bolt or changing any adjustment.

No Power is Dissipated in Turning Useless Wheels and Shafts



LL the power generated from the gasoline in your boat is used to *propel the boat*—and to propel the boat only—when you use The "Automatic" Marine Engine. That's why these engines cut down gasoline expenses *twenty-five and fifty per cent.*

It proceeds from the fact that the cylinders of the engine are independent, its construction is of an ideal simplicity and it is impossible therefore

for any power to be wasted.

Because of that right consumption of power, there is *less vibration* with

## The "Automatic"

Marine Engine than with any other.

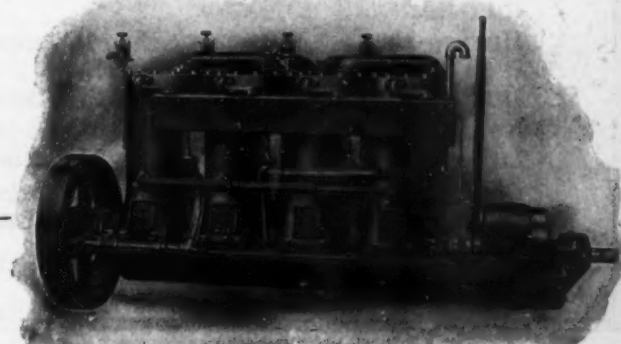
In other words—you can be at comfort in your boat.

Vibration of a boat indicates loss of power, loss of money—as well as being uncomfortable.



You save money with the "Automatic" also because they only need repairs once in a blue moon, and when that happens *you don't have to pay somebody else money for repairs.* You can do the repairing yourself, within ten minutes, with a tool equipment of five wrenches which comes with each engine. That's how simple this remarkable engine is.

We will allow you money on your old engine, and quote a low price on an **Automatic.** Send for our Catalog, and tell us the dimensions of your boat.

**AUTOMATIC MACHINE CO.**  
BRIDGEPORT, CONN.



**"APLCO" ELECTRIC LIGHTING SYSTEMS**  
FOR AUTOMOBILES,  
MOTOR BOATS AND COUNTRY HOMES  
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**You Are the Only Judge** of the engine and its merits. 25,000 satisfied users. Material and workmanship guaranteed for five years.

**Greatest Engine Bargain Ever Offered!**

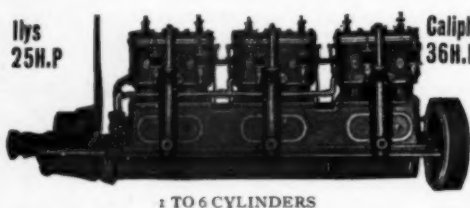
**30 Days' Trial** Try the engine for 30 days. If you are not fully satisfied, return it and we will promptly refund all money paid us.

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25H.P.

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Designers and Builders of Motor Boats 10 to 110 feet long.

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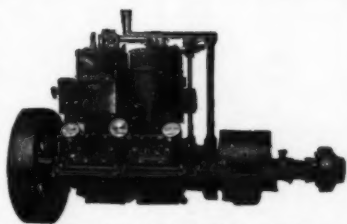
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How much more satisfactory it is in every way to build your own boat. And among Boating People, boats built over **Pioneer Perfect Frames** are known not only as dependable, staunch and reliable, but as the most graceful in outline and as being in every sense seaworthy.

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**157**

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*Speed Speed Speed Speed*

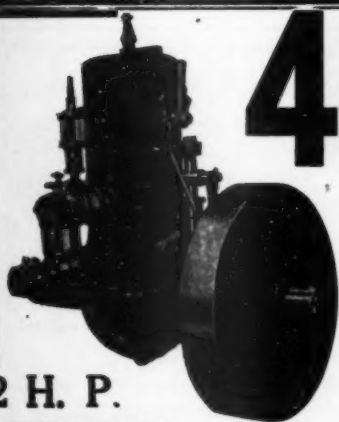
Sure you want to go just as fast as possible even though you are not speed crazy. What do you think of 27 miles per hour for a 32 ft. displacement boat equipped with but 35 H. P.? The owner has tried 17 different solid wheels on this outfit and the best of them was two miles an hour to the bad.

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**Compact - Low Running Cost - Simple**

High speed, absolute reliability. Extra power and extra wear. The Perfect two-cycle engine. 2, 3, 4, 6 and 10 H. P. From \$40 up. Two year guarantee. So simple in construction and operation a woman or child can run it.

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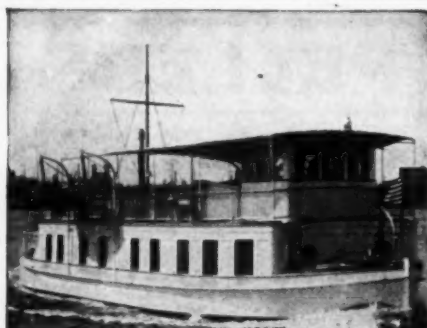
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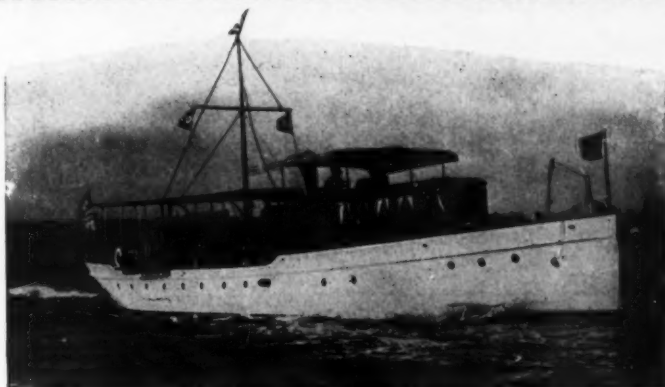
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85x14 Ft. Cruiser. Speed 14½ Miles Per Hour

New catalogue ready for distribution

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## The Motors That Never Back Fire

*QUALITY—Our first consideration and constant slogan*

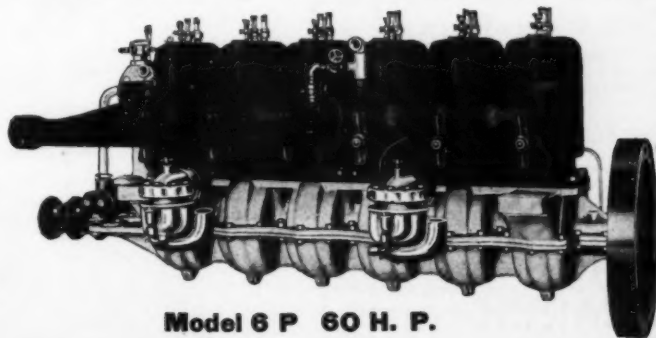
Simple in Construction

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Long Bearings for High Speeds

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Ease of Start and Reliability of Performance



Model 6 P 60 H. P.

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Built to stand the racks and strains of more than ordinary use. You can depend upon a T. & M. in any emergency.

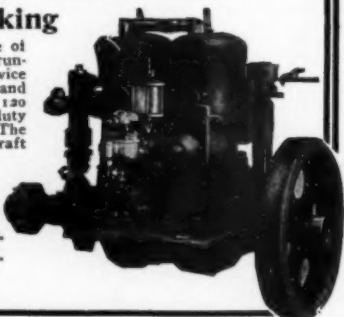
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and are instantly reversible. Ease of operation and control make the running of a T. & M. a joy to the novice as well as the expert. All styles and sizes—2 cycle, 2 port type—2 to 120 H. P.—light, medium and heavy duty—single and multiple cylinder. The right size and type for every craft up to 65 feet.

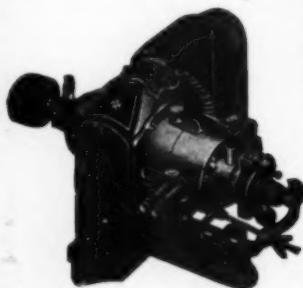
Write today for catalog and name of nearest dealer.

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Have **ELECTRIC LIGHTS** on your **MOTOR BOAT**



### The Motsinger AUTO - SPARKER

will generate current for ignition and lights for less money than you now pay for ignition current alone.

Saves its cost over and over again.

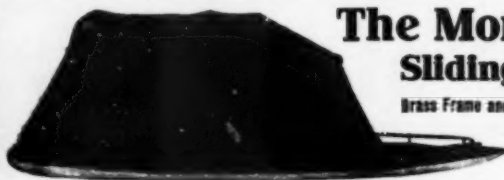
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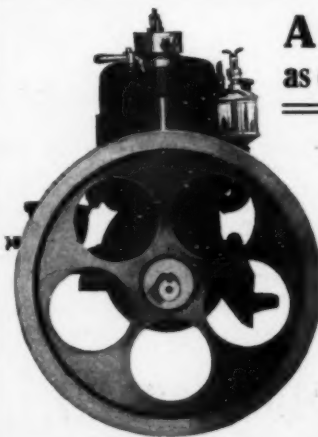


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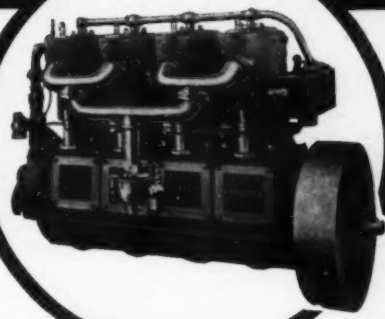
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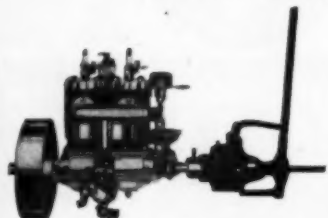
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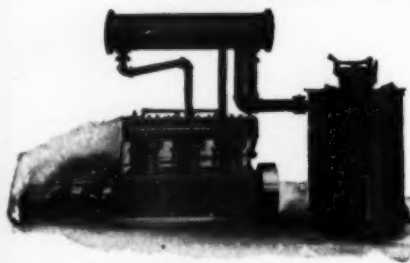
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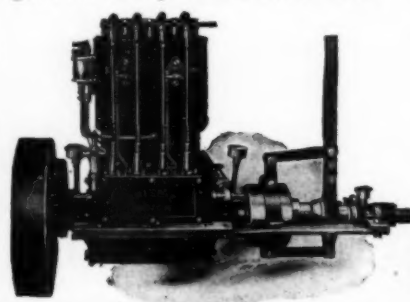
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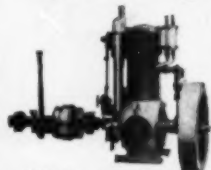
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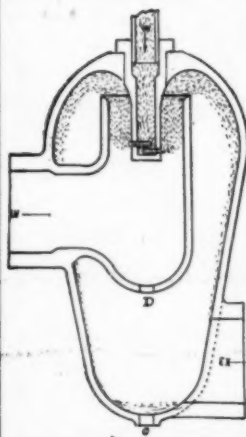
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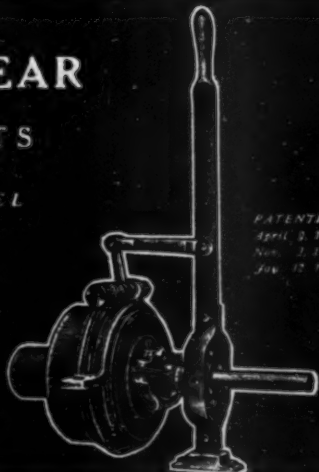
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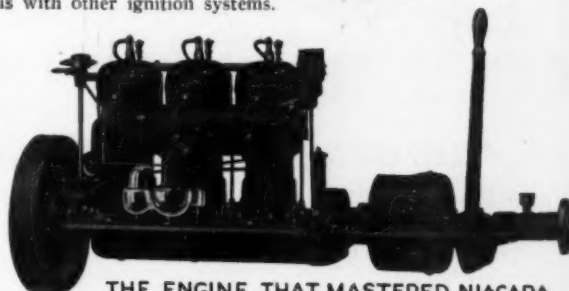
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An Engine that represents the most advanced ideas in gas engine design.



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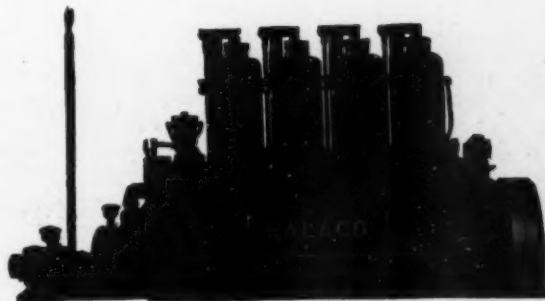
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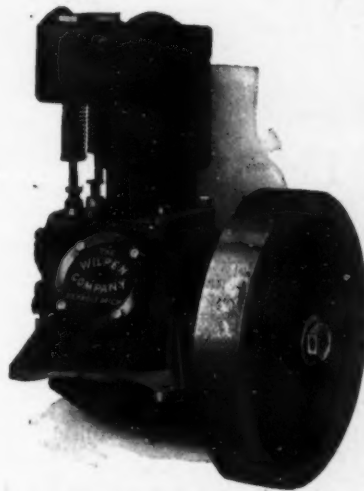
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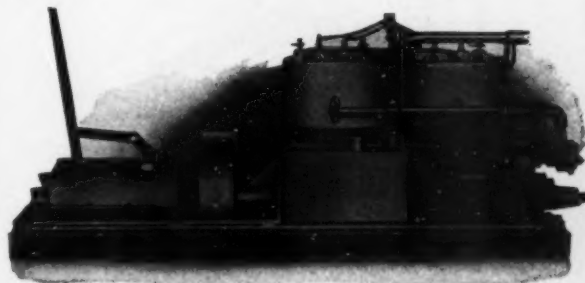
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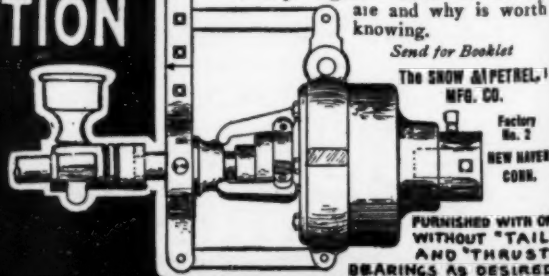
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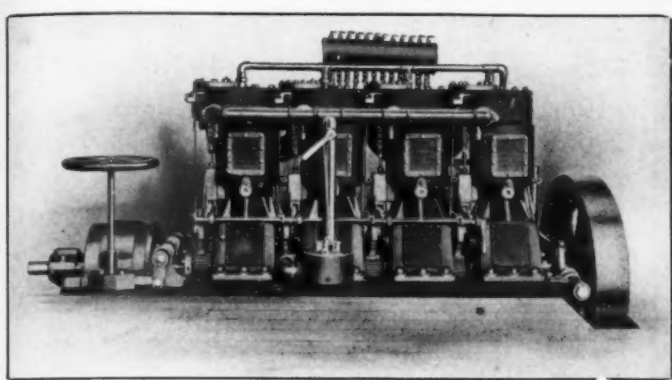
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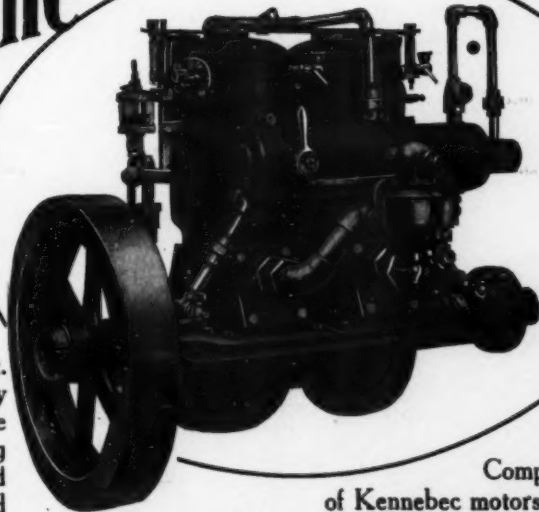
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Compare the bores and strokes of Kennebec motors with those of any other marine engine of the same horsepower.

Kennebec, 1 cylinder: 2 H.P., 3 1/2" bore and 4" stroke; 3 H.P., 4 1/2" bore and 4 1/2" stroke; 5 H.P., 5" bore and 6" stroke.

Kennebec, 2 cylinder: 4 H.P., 3 1/2" bore and 4" stroke; 6 H.P., 4 1/2" bore and 4 1/2" stroke; 10 H.P., 5" bore and 6" stroke.

Kennebec, 3 cylinder: 6 H.P., 3 1/2" bore and 4" stroke; 10 H.P., 4 1/2" bore and 4 1/2" stroke; 15 H.P., 5" bore and 6" stroke.

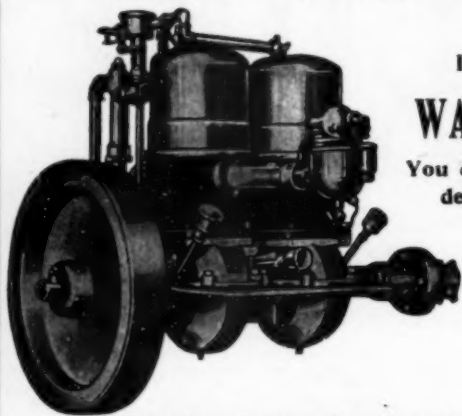
Be sure to get horsepower for your money

SEND FOR ILLUSTRATED DESCRIPTIVE PRICE CATALOGUE

**Torrey Roller Bushing Works, Bath, Maine.**

ASK ANYONE WHO OWNS A KENNEBEC

# WATERMAN



IF IT'S A  
**WATERMAN**  
You can absolutely  
depend on it

## For Small Launches and Tenders

A specially constructed, high-powered, light weight marine motor for small craft. The *Waterman B-2* meets every demand of a distinct need; weighs only 146 pounds; develops full 10 h.p., giving maximum power with minimum weight.

*Waterman B-2* is a proved marine motor construction; a little giant of strength. This motor is absolutely dependable under all conditions; five years of most successful marine motor construction is your guarantee that all trouble-making features have been totally eliminated. We want you to know all about this modern marine marvel, its many features and the remarkably low price at which it is sold. Write for full descriptive matter to-day.

### Special Yacht Models

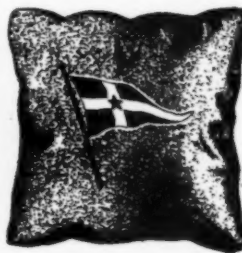
With Bosch High-Tension Magneto, Dual Ignition System.

Let us send you our literature.

**Waterman Marine Motor Co.**  
506-1512 W. Fort St. Detroit, Mich.

# MAN OVERBOARD!

OR MAN ABOARD.



**Hopkins**  
**Life Preserver Cushion**  
IS AN ABSOLUTE NECESSITY WHEN  
**Motor Boating,**  
**Yachting or Canoeing**

A PERFECT LIFE PRESERVER and Handsome BOAT CUSHION. Comfortable and ornamental, covered with durable, artificial Spanish leather filled with non-absorbent Japanese fibre, impervious to water, with four times the buoyancy of cork. **DELIVERED ANYWHERE** in U. S., \$1.25. Send for samples of styles and colorings.

**SPECIAL**--These Cushions can be made up with your Club flag or burgee embroidered thereon. Write for prices.

**Hopkins**

### FREE 1911 MOTOR BOAT CATALOG SAVES YOU MONEY

No better or more complete *Motor Boat and Yacht Guide* has ever been issued.

It describes in word and picture the greatest collection of watercraft necessities and luxuries ever gathered under one roof, in addition to Camper's and Fisherman's needs.

Our made-to-order specialties include sails, cushions, spray hoods, boat covers, flags, and yacht awnings at the lowest prices good workmanship allows.

Send us a trial order and get acquainted with the greatest Marine Hardware Concern in the United States.

We Sell By Post From Coast to Coast  
Prices Right, Service Right Away

**Hopkins**

119 CHAMBERS STREET, NEW YORK

## Steer Your Boat

with

# ROEBLING LAUNCH STEERING CABLE

A strong, pliable, durable and economical rope, consisting of a wire center, covered with high grade closely woven cotton yarn (not jute).

The center is made of thoroughly galvanized steel or *genuine bronze* wire as preferred.

The covering is furnished in standard colors and is treated with a waterproof compound.

If your dealer does not handle *Roebbling Cable*, write to

**John A. Roebbling's Sons Co.**

at Trenton, N. J., or

Chicago, Cleveland, Philadelphia, Atlanta,  
San Francisco, Los Angeles, Seattle, Portland, Ore.

John A. Roebbling's Sons Co. of New York, N. Y.

Prompt shipments from stocks kept in the above named cities.

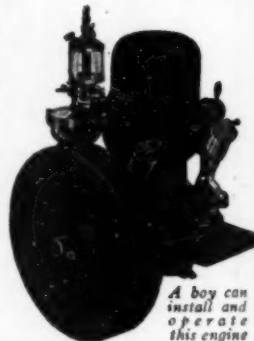
ROEBLING

# Belle Isle Motors \$23

Propel Perfectly

BARE ENGINE

Place this engine in your boat and then your only attention will be to the steering wheel. It will propel a 14 to 18 ft. launch or little row-boat at a speed adjustable to your desires--always hitting regularly and all parts working perfectly. Only the best materials are used in its construction. At normal speed it develops from



A boy can  
install and  
operate  
this engine

2 to 2 1-2 H. P.

It runs on gasoline, kerosene or alcohol, uses only one pint of gasoline per H. P. per hour; engine complete weighs but 73 pounds.

Complete engine with accessories.....\$43.50  
With fresh water boat fittings.....\$47.00  
With salt water fittings.....\$50.00

We have other models complete with accessories and fresh water fittings as follows: 4 to 5 H. P., \$69.00; 5 to 6 H. P., \$92.65; 9 to 10 H. P., double cylinder, \$155.50. Write at once for full information.

**Concrete Form & Engine Co.**  
12 Motor Boat Lane, DETROIT, MICH.



## Here's the Husky Engine that takes your eye every time

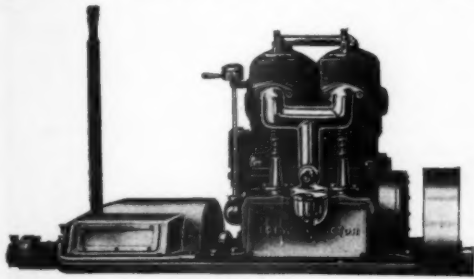
Made with the same CARE, EXACTNESS and PERFECTION  
that has made

# LOEW VICTOR ENGINES

so generally recognized as being the most dependable and desirable marine engines in the world.

THIS TWO CYLINDER—12 HORSE POWER LOEW VICTOR is an exceptionally well-balanced outfit, steady in its operation, with all vibration eliminated. It is furnished either with reverse gear or without it.

Best engine manufactured for cruising boats up to 28 feet in length—for open pleasure boats or work boats where comfort and stability are more essential than speed. Plunger Type Water Circulating Pump—Water Jacketed manifold—Die Cast White Bronze Bearings. Width of base 18¼ inches, Length of base 20½ inches—Type, 4 Cycle. Price on application.



### Loew Victor Engines

are built in sizes to suit all requirements

1 Cylinder.....	6 H.P.
2 Cylinder.....	12 H.P.
3 Cylinder.....	18 H.P.
4 Cylinder.....	24-40 H.P.
4 Cylinder (Special).....	15-30 H.P.
6 Cylinder.....	30-60 H.P.

## The Loew Victor Enthusiast

will be found wherever boats are used. He is the man who has learned engine wisdom from experience, and his advice is to BUY A LOEW VICTOR.

If you are a new hand at the "game" the Loew Victor will save you hours of worry and much expense. If you are already familiar with engines you know that the Loew Victor is the one that *always* runs *when* you want it and as *long* as you want it. It is the one most dependable engine at all times and under all conditions.

Send for our engine information catalogue. Free on request, and well worth having.

**THE LOEW VICTOR MFG. CO.**  
**9172 Madison Avenue, Cleveland, Ohio**

Ask us where you can see a LOEW VICTOR in your vicinity.  
There is surely one near you



## "One Dry Man is Worth Three Wet Ones"

In the lightest showers or the heaviest storms ImpervO is always waterproof, always comfortable, always sanitary, always light. When you go yachting or motor-boating prepare for bad weather by having a supply of ImpervO clothing on board for the convenience of your guests and crew.

But be sure and get ImpervO—the *only real* waterproof clothing.

Don't be satisfied with oilskins, cravenettes or rubber clothing. They are either too heavy, not sufficiently waterproof, or require too much attention to keep them "nearly" waterproof.

ImpervO retains its qualities for a long time without being touched. No need to spend time oiling it every time you want to wear it; furthermore, it is never sticky, greasy, gummy or heavy—like the ordinary waterproof (?) clothing. ImpervO is rubberless and can be cleaned with soap and water. It is abso-

lutely water, grease and acid proof, and never requires oiling.

ImpervO is the only goods not affected by hot weather; it has been used for years by Army officers throughout the tropics. The U. S. Army Infantry board endorsed it as the best ever for Ponchos, shelter tents, etc.

ImpervO clothing consists of Men's Jacket Sailor Suits, Long Coats, Auto and Hunting Coats, Army Capes, Overalls, Hats, etc., Ladies' Long Capes, Coats and Skirts, all in the Army Olive Drab or Black colors. It is also sold by the yard for Awnings, Boat Covers, Decks, etc.

If your dealer cannot supply you, write direct for catalog Y-4, samples and prices to:

If your dealer cannot supply you, write direct for catalog Y-4, samples and prices, to

**E. A. Armstrong, 209 W. Kinzie St., Chicago**

ImpervO  
Agents:

New York City: Warnock & Co., 19-21 W. 31st St.; The Howard Place Co., 162 South St.  
Boston: A. S. Morris & Co., 220 Commercial St.  
Providence, R. I.: Walter Coleman & Sons, 300-312 S. Water St.

Philadelphia: Jacob Reeds' Sons, 1424 Chestnut St.; F. Vanderherghens' Sons, 7 N. Water St.; E. A. Edwards (Naval Architect), 14 S. 18th St.  
Washington, D. C.: S. N. Meyer, 1231 Pennsylvania Ave.



## She Fairly Flies Through The Water

**H**ERE'S a clean cut, snappy speed boat that will make the heart of any speed enthusiast thump with pride—a flyer that will pull away from any boat in her class, and has time and time again left craft of greater size and power than herself far behind. "If you want to *move some* when you throw on the switch, buy the *Red Wing*," is the advice of one of our customers to you who've got the speed bug. And she's as staunch a craft as ever skimmed the water. We have hundreds of letters like this: "The whole boat is a dandy. I had no trouble whatever; the engine worked like a charm. I don't see how any one could have any trouble."

### The Red Wing "Flyer"

is made in various sizes, from 18 to 40 feet, equipped with *Red Wing* motors to suit your wishes as to speed and power. In equipping them with *Red Wing* motors we not only give you the last word in a motor, the motor that has given unbounded satisfaction to thousands of owners in other makes of boats as well as the *Red Wing* boats, a motor that has stood up under the severest tests ever demanded of marine motors, but we also save you the profit and transportation charges we would have to pay if we used a motor of another make. The *Red Wing* Boat and the *Red Wing* Motor have proved the winning combination every time. Twelve years of experience in the manufacture of boats and engines and the strong *Red Wing* Guarantee are behind both.

Because of the saving effected by our enormous output, we place this "Speed Bug's Delight" and other motor boat delights within your reach.

Write today for more information and specifications and the beautiful *Free Motor Boat Book*.

**RED WING MOTOR CO.,**

Dept. C1

Red Wing

Minnesota

## Prest-O-Carbon Remover



**Cleans  
Out Any  
Gas Engine**

**Motor Boat, Automobile, Motorcycle  
or Stationary.**

Tearing an engine to pieces and scraping out the carbon is slow, hard work, and likely to do more harm than good.

Prest-O-Carbon Remover injected in the cylinder loosens and removes all carbon from cylinder walls, piston, piston rings and valves. Cleans a cylinder perfectly in an hour for 25 cents or less. Increases compression, power and durability. Has no effect whatever on metal—cannot injure the engine in any way. We guarantee this. Easy to use—directions on can.

**Try It Under This Guaranty:—**

There are many imitations of our preparation, so to make sure you get the genuine article, send us your order and we will ship you, express-prepaid. (Quart, \$1; half gallon, \$2; gallon, \$3.75.) If you are not fully satisfied with the results, simply tell us and we will promptly refund your money.

**The Prest-O-Lite Co.,** 260 East South St.  
Indianapolis, Ind.  
(Makers of Prest-O-Lite Gas Tanks.)



**We offer YOU  
a chance  
to try out  
Without Cost**

## The EUREKA TWO CYCLE SPECIAL CARBURETOR

This is the carburetor that works as simply, efficiently, and completely as the two-cycle engine.

There are NO moving parts,—NO springs, cork, leather or packing.

An especially designed EUREKA piston, throttle, which operates automatically, permanently, and dependably at *all* speeds, in *any* weather, and with *any* grade of gasoline, is the revolutionary principle which places the EUREKA far in advance of any carburetor previously designed. Take advantage of our offer to return your purchase price immediately, if, after 30 days free trial, you are not more than merely satisfied with the EUREKA Carburetor.

*Our price list fully describes and illustrates EUREKA and will be sent free on request.*

**THE VARIABLE POWER GAS ENGINE CO.**

**Main Office : 52 Wall Street**

**Showrooms: 141 Liberty St.**

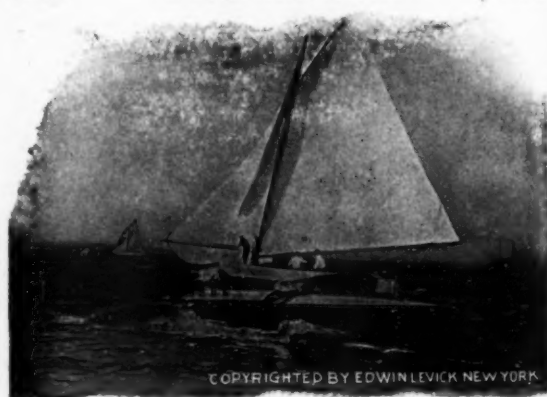
**NEW YORK**

## GEO. B. CARPENTER & Co.

1840

**Marine Accessories**

1911



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Everybody interested in sailing or motor-boating should own a copy of our

**500-page Marine Supply Catalog No. 101**

**and**

**1911 Discount Sheet and Supplement**  
**Our Catalog Contains—**

Valuable and interesting information on the care and handling of marine engines, and sailboats, written by men who are recognized authorities. In addition, it illustrates and describes our complete line of marine equipment, boat-builders' tools and supplies.

If you are interested send for a copy, inclosing 20 cents in stamps to cover mailing, which will be credited on first order. Your name on our mailing list will also insure your being kept thoroughly posted on new equipment for the coming season.

**GEO. B. CARPENTER & Co.**

**202-208 South Water Street, Chicago Illinois**



## The Test Of Terribly Hard Work Proves This Great Marine Motor

**T**HIS is not just a claim on our part. It is simply the sum and substance of hundreds of letters we have received from hundreds of enthusiastic users of "Perfection" Marine Motors. Many of these correspondents are ferrymen, men who have heavy towing to do or people who use their launches for long river and lake fishing and hunting trips and have to have an engine that does lots of hard work without much attention. The "Perfection" is a surprise to all who use it because it does its work so well and with so little commotion. Practically no attention is required outside of seeing that there is a good flow of gasoline and a good spark. The engine sends the boat along at a great old rate, and does so without excessive vibration or pounding. Its soft purr delights the ear of the experienced boatman.

### "Perfection" Marine Motor Lasts As Long As The Toughest Boats

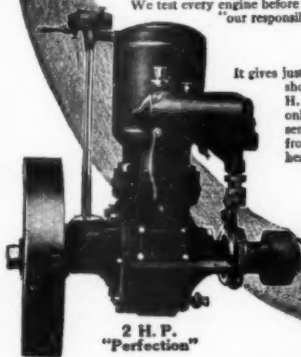
The "Perfection" is built to last, to test above its rating, to do more than we claim for it. And it does it every time. You won't have the exasperating experience of being the **only** person to have trouble with the "Perfection." Every engine we send out gives satisfaction. Every part is scrutinized in the making, every detail rigidly inspected until it comes right up to our high standards. We test every engine before shipment—make it turn a propeller submerged in a tank of water. We satisfy ourselves first. And our responsibility never ceases until we know that you are thoroughly satisfied.

#### Boat Enthusiasts Get Our Free Book

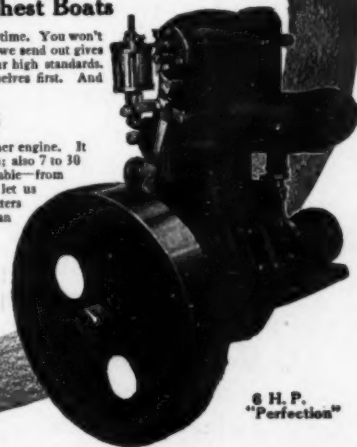
It gives just the information you want about Perfection features that you cannot get in any other engine. It shows you that we build in 2, 2½, 3½, 4, 6 and 8 H. P. in the single cylinder engines; also 7 to 30 H. P. in 2, 3 and 4 cylinder engines. It tells you how the prices are made so reasonable—from only \$40 to \$450 according to type and horsepower. Write today for this book and let us send you, as well, the name of our dealer nearest you and also a bunch of interesting letters from boatmen who have been using "Perfections." Write to us today so that we can hear from you while our supply of books holds out.

**Caille Perfection Motor Co.**  
103 Caille Street DETROIT, MICHIGAN

"Send for our Stationary Kerosene Engine Catalog if interested"

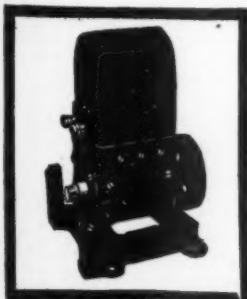


2 H. P.  
"Perfection"



6 H. P.  
"Perfection"

Engines carried in stock by: Bruns-Kimball & Co., 134 Liberty St., New York, N. Y.; Gibbens & Stream, 213 Canal St., New Orleans, La.; Woodhouse Gasoline Engine Co., Seattle, Wash.; Geo. G. McLaughlin Mfg. Co., Boston, Mass.; The Marine Engine Supply Co., Los Angeles, Cal.



#### THE K-W LOW TENSION MAGNETO, \$35.00.

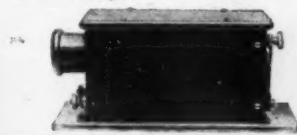
See cut above.

Belt or friction drive, for use with timer and K-W Coil.

#### Electric Search Lights

In addition to running ignition, K-W Low-Tension Magnetos will run a 25 candle power Tungsten bulb.

Complete search light outfit, magneto, deck-control search light, switch, wire and bulb, \$50. Search light only \$15.



Single Cylinder Marine Coil, without cover or switch \$6.00  
Single Marine Oak Coil, with cover \$7.00  
For multiple cylinders, stack single coils alongside each other.

**WE HAVE A GUARANTEED REMEDY FOR YOUR IGNITION TROUBLES**  
**WRITE FOR CATALOGUE**

WE PAY EXPRESS charges East of the Mississippi River or to the Mississippi on points beyond, when cash accompanies the order on any of our goods.

**K-W High Tension Magneto**  
Must be gear driven. NO Coil, NO Timer, NO Batteries. Gives absolute synchronism. If you want all the power out of your engine there is in it, use the K-W High-Tension Magneto. Especially for RACING ENGINES.

#### MODEL J.

See cut below

For engines up to 30 h. p. that can be cranked easily.  
1-cyl. . . . . \$40.00  
2, 3, 4-cyl. . . . . \$50.00  
6-cyl. . . . . \$55.00

#### MODEL H. Four Magnet.

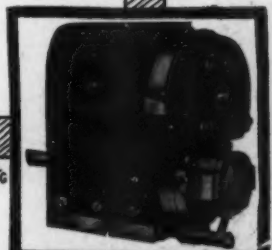
For engines up to 40 h. p.  
2, 3, 4-cyl. . . . . \$75.00  
6-cyl. . . . . \$85.00  
8-cyl. . . . . \$95.00

#### MODEL HT. Five Magnet.

For largest engines made.  
2, 3, 4-cyl. . . . . \$95.00  
6-cyl. . . . . \$105.00  
8-cyl. . . . . \$105.00



**THE K-W IGNITION CO.**  
50 POWER AVE. CLEVELAND, OHIO, U.S.A.



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Los Angeles, Weinstock-Nichols Co., 1216 S. Olive Street.  
Portland, Ore., Rober Machinery Co., 26 E. Morrison St.  
When writing to advertisers please mention MOTOR BOATING, the National Magazine of Motor Boating.

Seattle, Wash., Racine Boat & Auto Co.  
Kansas City, Kansas City Auto Supply Co.  
Omaha, Powell Supply Co.  
New Orleans, Interstate Electric Co., Baronne and Perdido Sts.  
Philadelphia, Vall Schaefer Co., 60 Arch St.  
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Canada, Canadian General Electric Co., Toronto.

# We Object

A STATEMENT of FACTS from C. F. ROPER & CO., Hopedale, Mass.

- ¶ We object seriously to the statements and claims made by other manufacturers that they make either a propeller that gives more perfect control than is possible with any other device, or one that allows of perfect control of the boat at all times without touching the engine.
- ¶ We doubt if such statements and claims made for any other than the Roper Safety Propeller will stand the proof, and we are willing to submit to any reasonable competitive test to determine the accuracy of such claims.
- ¶ We wish to go on record with the statement that we believe the ROPER SAFETY PROPELLER is the only one in existence that allows perfect speed control, absolutely independent of ANY adjustment of the engine, that it is the only one that always has the full power of the engine instantly available.
- ¶ We are the first and only concern to obtain this remarkable control, and have for four years fully explained in all our advertising matter why and how the Roper Safety Propeller brings about these results.
- ¶ It's one thing to make strong claims—but it's entirely another matter to back them up and to give the reasons why.
- ¶ We want it thoroughly understood that the Roper Safety Propeller must not be classed with any other device, as it represents an entirely new, different, exclusive, and effective principle of speed control.

*For further particulars see our advertisement in this issue*

C. F. ROPER & CO.

## The MOTOR BOAT

Every Thursday.  
ONE PENNY.

Published by:  
TEMPLE PRESS Ltd.  
7-15, Rosebery Ave.,  
LONDON, E.C., Eng.

DEALS exhaustively with every phase of the Sport and Industry, providing matter of interest and instruction to present and prospective owners of power craft, be they lovers of the stream, lake, tideway, or the open sea. It is profusely illustrated by working drawings in the technical section, and all important racing events are illustrated by photographs and sketches. There is no better journal for keeping one well informed on ALL questions pertaining to power craft. Its scope is unlimited—Advertisers in its pages receive enquiries and orders from all parts of the world.

SUBSCRIPTION—"THE MOTOR BOAT" will be mailed regularly at the following rates:  

	12 mos.	6 mos.	3 mos.
United Kingdom	8s. 6d.	5s. 6d.	3s. 6d.
Other Countries	9s. 6d.	6s. 6d.	4s. 6d.

 REMITTANCES.—Postal Orders, Cheques, etc., should be crossed and made payable to "Temple Press Limited."







For your safety and convenience have a  
**McClellan Quality Auto Boat Top or Simplicity Spray Hood**

The only Top made that can be operated without detaching any part of the framework. The one man Top]. You take no chances. There are times you cannot handle a Boat Top, unless made the McCLELLAN way. COST NO MORE. Think it over.

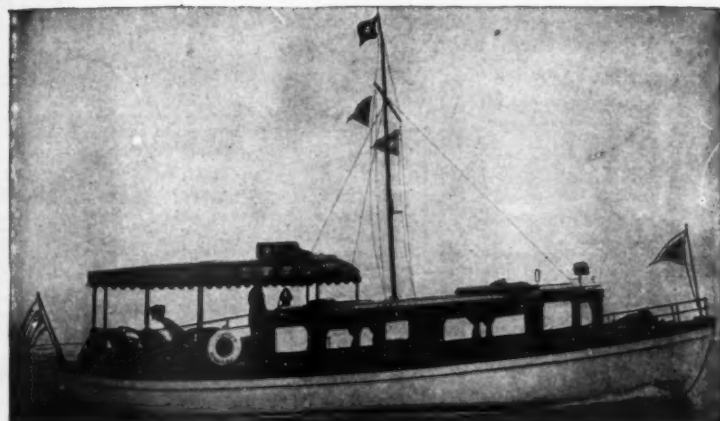
Send us the dimensions of your cockpit. Let us quote you prices



**McClellan Life Preserver Pillow**  
**\$1.00**

Will float the heaviest person hours at a time. Red, Brown or Green. Spanish artificial Leather.

**McClellan Top & Hood Company**  
**Fall River, Mass.**



## Get the Worth of Your Money

Will find it in our stock boats  
 21-25-30-37 6" and 40 feet

**The BAYONNE LAUNCH CO.**

East 36th St. and N. Y. Bay  
 Bayonne, N. J.

Take C. R. R. of N. J. to 33rd St. Station

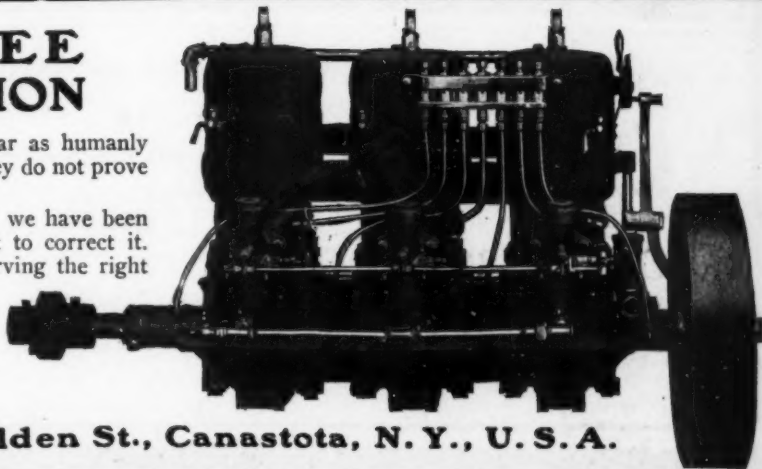
## OUR GUARANTEE YOUR PROTECTION

**TUTTLE MOTORS** are guaranteed right as far as humanly possible to have them before leaving our works. If they do not prove to be so, we stand ready to make good any defect.

We do not limit the time of this guarantee, for if we have been at fault, we believe it is very much to our interest to correct it. Notify us of the trouble and we'll make good, reserving the right to have the defective part returned for examination upon our request and at our expense.

Our catalog tells the complete story and shows the motors exactly as supplied.

When writing kindly tell size required.



**TUTTLE MOTOR COMPANY, 543 Holden St., Canastota, N. Y., U. S. A.**

## "WOLVERINE" Kerosene—Gasoline

"The Motor With the Bore and Stroke"

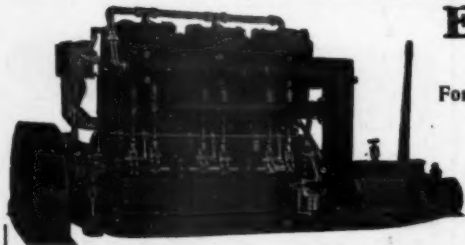
## MARINE ENGINES

4 Cycle. 5 to 100 H. P.

For Pleasure and Commercial Service

High Grade Machinery for Discriminating Buyers

There is a big advantage owning an engine adapted to a variety of fuels, because some are always readily procurable. "WOLVERINE" Engines are suitable for every class of service where reliability and economy are demanded.



Write for our Catalog 53

Selling Agents Wanted



"Marie," 230 tons capacity, 120 feet long, of Antwerp, Belgium. A 36 H. P. Wolverine motor drives her at a speed of 7 miles an hour.

**WOLVERINE MOTOR WORKS BRIDGEPORT, CONN., U.S.A.**

When writing to advertisers please mention MOTOR BOATING, the National Magazine of Motor Boating.

QUALITY



QUANTITY

## Advertising Supremacy

FOLLOWS

## Circulation Supremacy

During the three months of 1911  
ending March 31

# THE BOSTON AMERICAN

Gained **543<sup>1</sup>/<sub>2</sub>** Columns

of advertising, or 152,110 lines, over the same months  
in 1910

¶ ALL the other Boston newspapers having daily and  
Sunday editions, without exception, LOST!

¶ There is just one REASON for these advertising  
gains—RESULTS.

¶ And one big reason for RESULTS—the largest  
circulation in New England daily and Sunday.

**OVER 380,000 DAILY**  
**OVER 360,000 SUNDAY**

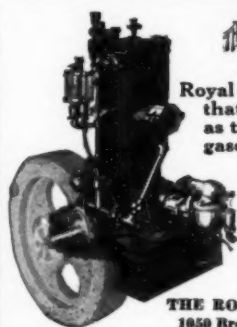
## This Magnificent Steel Launch



Stylish 16-Footer Fully Equipped  
with Engine Ready to Run!

**\$96**

1911 models of the Michigan Steel Launch are now ready for delivery at the lowest prices quoted on boats anywhere. Our special low price schedule for immediate orders covers every launch we make—16, 18, 20, 23 and 27 footers. All sizes in stock for immediate shipment. We are the sole owners of patents covering rolled-steel constructed boats. This construction lasts practically a lifetime. We have the only construction of this kind in the world. Write for booklet describing trip. Leave your Michigan Launch in the water or out on the beach in all kinds of weather for months. It is puncture-proof. Equipped with the wonderful Detroit Engine, guaranteed for five years, any horse-power from 2 to 50. Fewest moving parts of any engine made. Anyone can run it. Free fully illustrated catalog shows all 1911 models. Don't buy a launch until you see this book. Write for special proposition and prices to Demonstrator Agents. STEEL BOAT CO., 1236 Jefferson Avenue, Detroit, Michigan, U. S. A. (77)



## ROYAL ENGINE

Royal engines are of the kind that keep running as long as they have a spark and gasoline.

They possess many valuable and distinct features.

Get our Catalogue and learn about them before purchasing.

THE ROYAL ENGINE COMPANY  
1050 Broad St., Bridgeport, Conn.

## THE RELIABLE WATER JACKETED COIL MUFFLER

For Gasoline Engines of All Kinds  
Perfect in Operation—Simple in Construction

If you want to reduce the sound of your exhaust without offering any resistance to the flow of spent gases, and thus retain the full power of your engine, use The Reliable Water Jacketed Coil Muffler.

After experimenting for some time, and with many varieties of mufflers, we perfected the coil muffler, and believe it to be the best manufactured today.

The details of its construction form an interesting chapter in motor literature.

Send today for booklet.

JOHN BOYLE MACHINE COMPANY  
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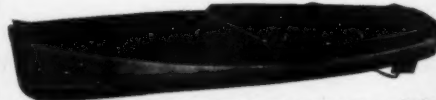
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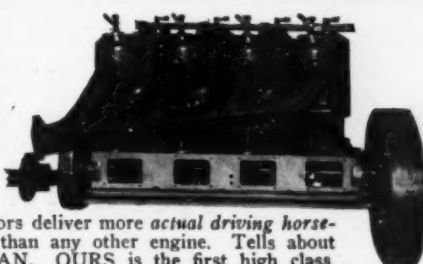


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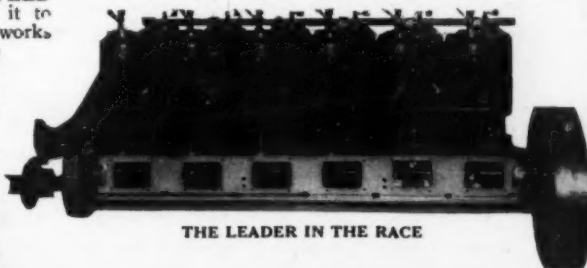
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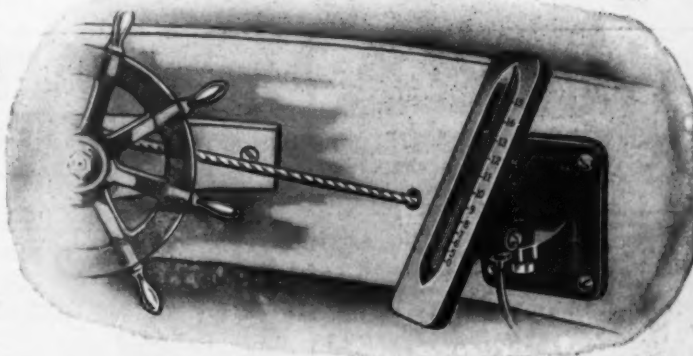
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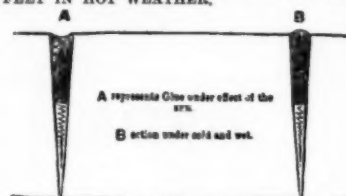
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### APPLICATION OF MARINE GLUE TO DECKS

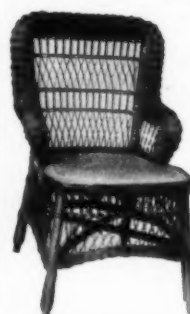
The reduced Section of Deck (see cut) shows the appearance of the Glue in the seams when the planks are under expansion and contraction. The desirability of the Glue is one of its most valuable qualities, as it allows the timbers to contract and expand, still retaining its great adhesive power to the edges of the plank.

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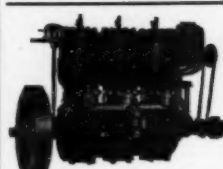
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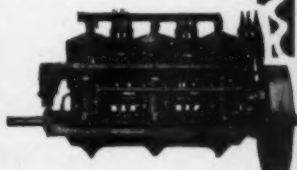
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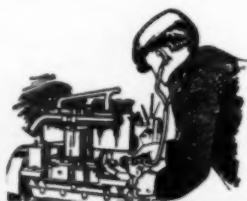
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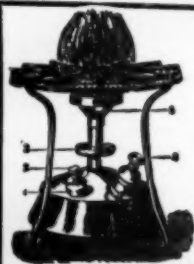
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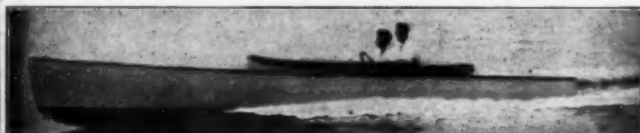
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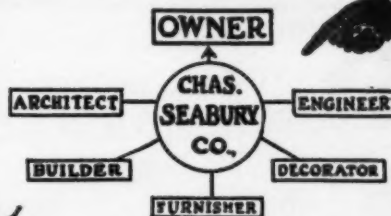
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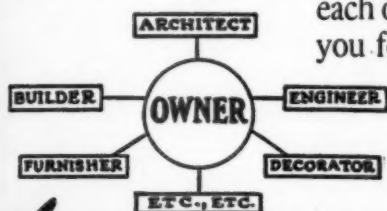
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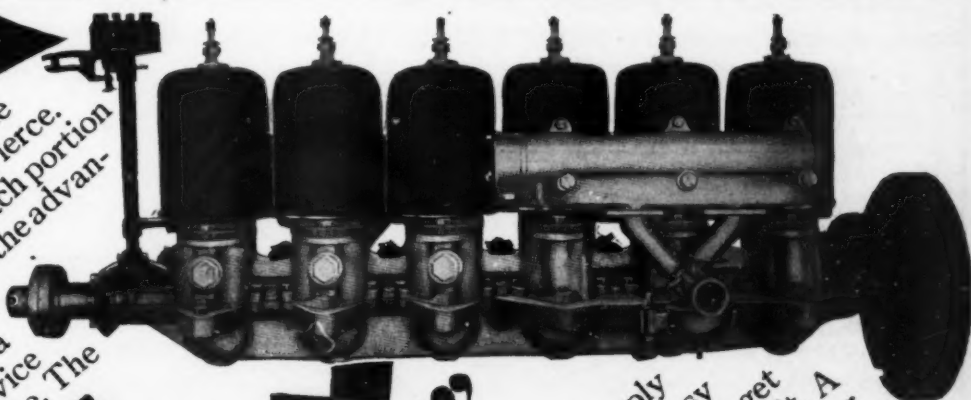
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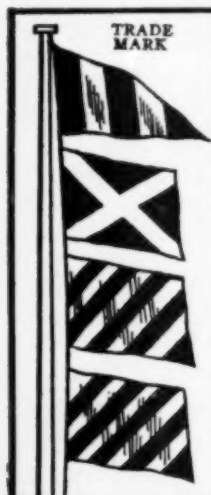
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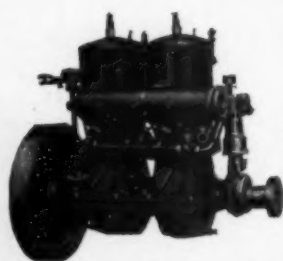
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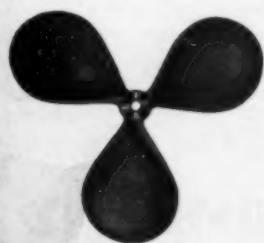
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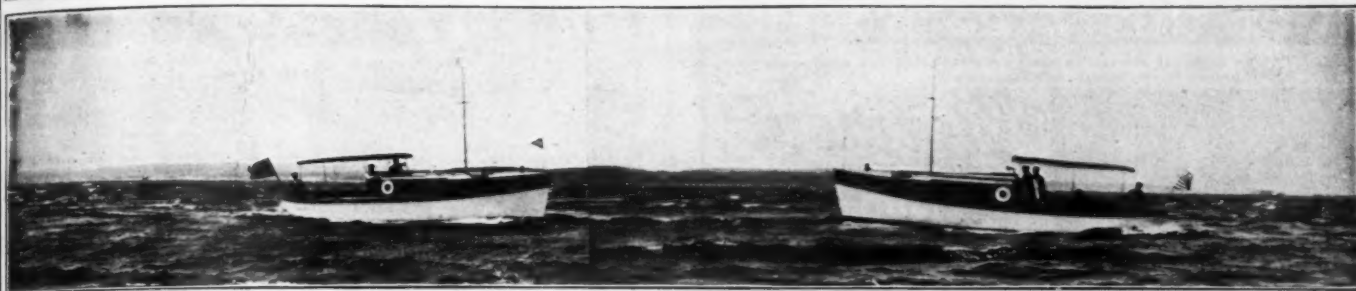
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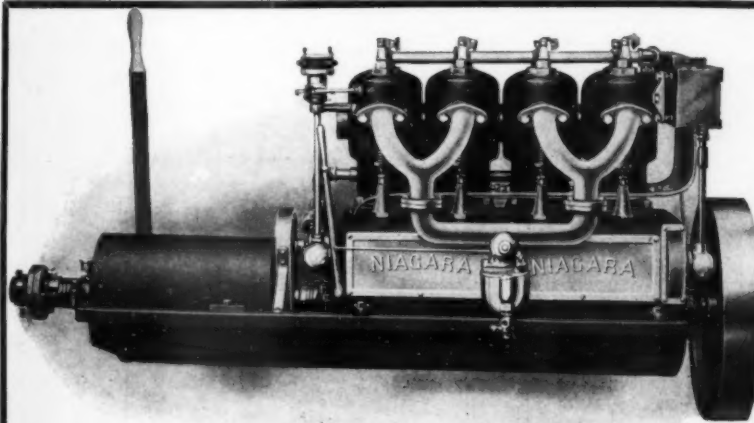
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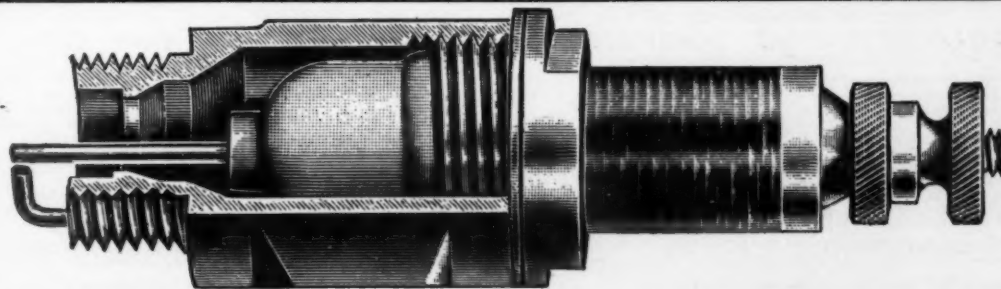
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NIAGARA GASOLINE MOTOR CO., 194-200 Breckenridge St., Buffalo, N. Y., U.S.A.

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## COMET AND SOOTLESS SPARK PLUGS

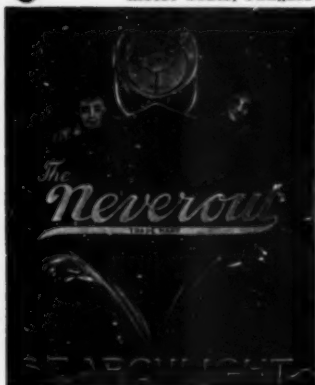
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- tells all about the most practical lighting equipment for motor boats, bungalows and camps.



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make night trips safe as day; **Neverout Generators** furnish a constant supply of purified acetylene gas sufficient for both cabin and deck lighting. Require no vibration—instantly attachable for tent, bungalow and camp use.

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This picture shows one of our 5 ft. cabin cruiser frames ready to take apart and move for shipment. Everything is done right up to the point where planking is to be put on. One man can re-assemble this frame and have it ready for planking in six hours' time. Any man, experience unnecessary, can finish this boat and fit it with power for less money than he would have to pay for the cheapest 5 ft. cruiser offered by any manufacturer of completed boats today. We carry a full line, from the canoe to the 5 ft. cabin cruiser.

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You may not have time to build your own boat. Cabin cruisers are our specialty. Write us and we will convince you that other manufacturers cannot meet our prices on finished boats. Let us quote on your specifications for a boat of any type.

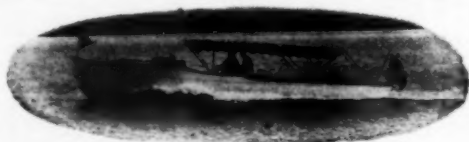
The superior excellence of our designs; beauty, seaworthiness, and speed in our boats; and a square deal and popular prices have brought us in the past five years from a small, unknown factory to rank among the largest and best known builders of both knock-down and completed boats in the land.

We make a specialty of knock-down frames for large cabin cruisers, but as a result of our frame business, can quote prices on finished cruisers that cannot fail to interest.



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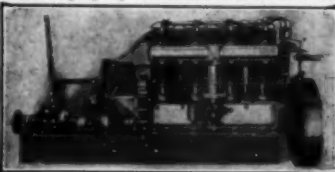


"ADVANCE" 37 ft. x 7 ft. Semi-Cruiser!

This boat won first prize at Interlake Regatta, Put-in-Bay, making 20 actual miles per hour, equipped with one of our 60 to 80 H. P. high speed motors. Can furnish this outfit complete. Price upon application.

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Made a flying trip over Lake Erie (Detroit to Buffalo) in 11 hrs. 5 min. without a hitch, the fastest time ever made by water. Won first prize at Elks' Carnival, cup and flag, speed over 32 mi. per hr. Can do flying mile in 1.47. Equipped with two of our 60 to 80 H. P. high speed motors. See article.



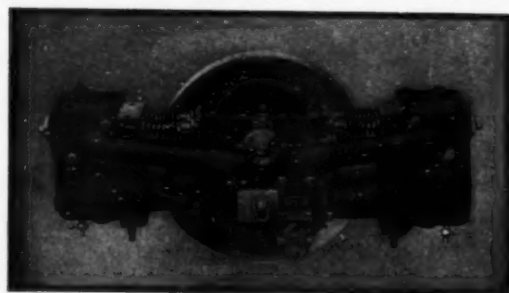
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1911 Models are now ready. 2, 4 and 6 cyl., 12 to 40 H. P. 4 and 6 cyl., 40 to 80 H. P. high speed. These motors are as good as mechanics and materials can make them, and will pay you to investigate. Price is right. Write for agents' proposition.

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Of the two cylinder opposed four cycle type.

The Motor which is surprising the boat owners in every locality wherever introduced, on account of their compactness (can be placed under seat in so desired), economy of fuel consumption, non-vibrating qualities, and their perfect reliability. When supplied with a good spark and plenty of gasoline they will run until stopped.

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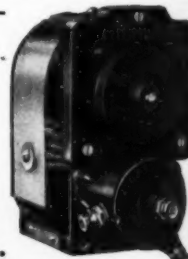
High Pressure Electricity Makes the Motor Go.

Ours is the factory where we build a wonderfully designed NEW type of magneto (low tension, big spark advance). This magneto will spark any sort of a two or four stroke engine. High or low speed makes no difference. THE MARVELOUS MICHIGAN will give a BLAZING BLUE "VITAL" SPARK at 32 revolutions per minute. Hitch it to your "poky-put-put" and watch her buzz. Manufacturers, here is something you would better investigate. Owners, dealers, agents, this magneto is what you want. Send for our free book of engine sparks. Let some "MICHIGAN LIGHTNING" strike the spark plug of your motor. Get wise. Wake up. Write today.

Michigan Magneto Co..

116 Bagley Ave., Detroit, Mich.

## The Marvelous Michigan Magneto



## No Barnacles, No Grass, No Bluff. "Henke Perfection Bronze" is the Stuff

Proof? Read this excerpt from one of the many letters of commendation we receive; it tells better than we can what "Perfection Bronze" always does: I am pleased to say that two coats of your "Perfection Bronze" paint is all that was required throughout the entire season, and when I put up my boat for the winter the bottom

was as clean and free from barnacles as when I put her over, with the exception of one small patch on which I used some other paint to cover a small leak caused by a strain, and this patch was completely covered with marine growths.

"Perfection Bronze" dries with such a smooth surface that it makes a very fast bottom. Rubbing down with pum-

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It is put up in a patented can which keeps the liquid and the bronze separated until you are ready to use it. By this means the paint is fresh, elastic, easy to apply and quick-drying.

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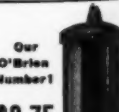
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storage battery. Fulfill all requirements.

Send for catalogue and attractive low prices on whistle, horns, searchlights, dynamo and other accessories.



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**N**O matter what you want to know about motor boats, their upkeep, running, parts or accessories, you will find what you want to know in the handsomely illustrated editorial pages of **MOTOR BOATING**. The advertising pages, just as important to the reader as the editorial pages, contain the first announcements of the leading manufacturers.



# **VALENTINE'S VALSPAR** "The Varnish That Won't Turn White"

When your boat is ready for the Varnish, see that you get an absolutely waterproof spar varnish and a foul-proof bottom paint.

**T**HE only perfectly waterproof spar varnish made is Valspar—the spar varnish that won't turn white when left in water any length of time.

The fact alone that Valspar won't turn white in water shows that moisture has absolutely no effect on it, that it is perfectly waterproof.

Valspar is the only spar varnish that will remain unchanged indefinitely—the only one that never deteriorates in color, brilliancy, durability, and hardness.

Valspar dries the quickest and hardest of all spar varnishes, and is as nearly transparent as glass, when applied.

We will gladly send to anyone who is disposed to investigate a piece of japanned tin, varnished on one end with Valspar, on the other end with one of the best known Spar Varnishes.

Put it in water. The Spar Varnish end will turn white. *But we will pay you \$1000.00 in cash if the Valspar end turns white.*

## VALSPAR BRONZE BOTTOM PAINT

Two coats of Valspar Bronze Bottom Paint will keep the bottom of your boat perfectly foul-proof for a whole season—no kind of sea life can or will adhere to it.

It is quickly applied—three hours after the first coat you can apply the second—and three hours later it will be dried hard and smooth. It can be rubbed for a hard, smooth racing finish.

It's all ready mixed and will not harden or turn green in the can.

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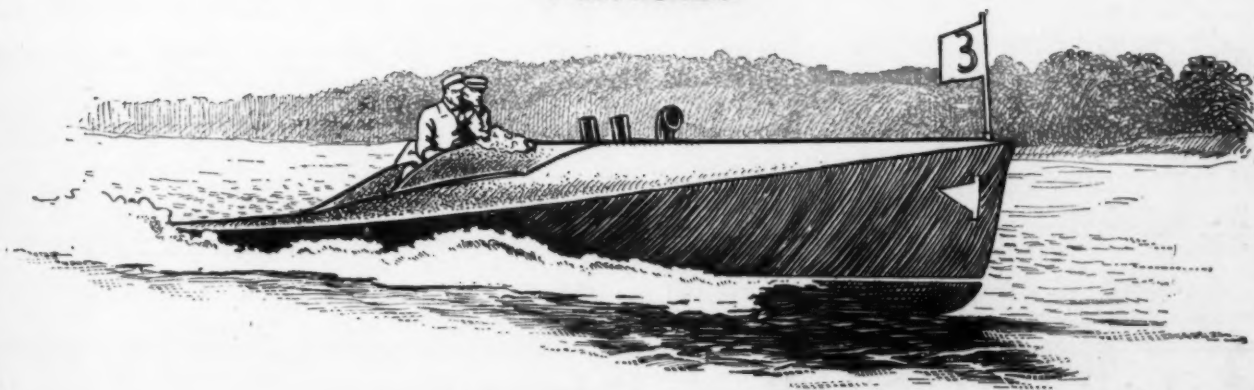
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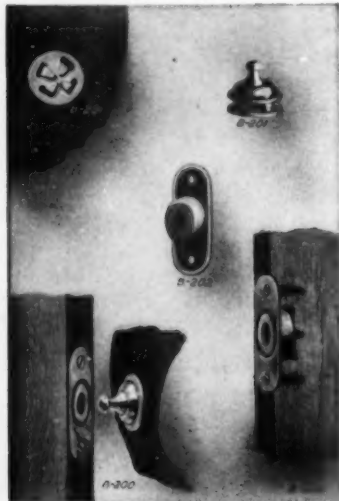
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**VALENTINE'S  
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## BROGA AUTOMATIC FASTENERS



Above cuts show design of special Motor Boat Curtain Fasteners that set flush with wood.

B-200—Shows the complete Broga Automatic Fastener

B-201—Shows method of securing fastener to goods. The stud has twin washers, one on each side of the goods, to prevent tearing out

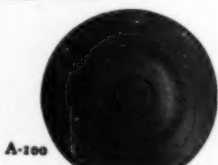
B-202—The socket, front and back view. The front view shows method of fastening it to woodwork

For Motor-Boat Curtains, Slip Covers, Spray Hoods, Etc.

The only Fastener designed for Motor Boats: sets flush with wood, leaving no projections to be knocked off or damaged when approaching docks or other boats.

They work automatically from any angle; add refinement and distinctiveness; are durable, and a sure lock.

Manufacturers, Jobbers or Consumers do not overlook the Ideal Equipment for Motor Boat Curtains. Write for Free Sample—or better, since they are so inexpensive, send for a set. (See prices in next column.)



A-100



A-105

FRONT AND BACK VIEW of "Broga" Automobile Curtain Fastener which is also used on "Motor Boat" Curtains, etc., with stud A-103 or A-105.



A-103

This form of stud is used for fastening goods to woodwork, etc.



A-105

This form of stud is used for fastening goods to goods.

## Y-O-U Y O U Y-O-U

Have been looking for an *Automatic Fastener* for your *Motor Boat Curtains* and *Spray Hoods*—one that works automatic from any angle, and can be operated in an instant.

**Broga Fasteners** fill a long felt want, and are the only fasteners designed especially for Motor Boat use.

When you push your boat into the water for a season of pleasure be sure that you can say "*She* is equipped with **Broga Automatic Fasteners.**" Then, your pleasure will not be marred by trying to fasten the old style fasteners at a critical time.

If your dealer hasn't **Broga Fasteners** in stock, we will be pleased to fill your order by mail immediately upon receipt of same.

**Prices** Styles A-103 and A-105 \$ .75 per Dz. net.  
Styles B-200 .85 per Dz. net.

All prices, F.O.B. Syracuse, N. Y.

Order today and fix up *right*. Descriptive price-list sent upon request.

### BROGA AUTOMATIC FASTENER COMPANY

368 West Fayette Street

SYRACUSE, NEW YORK

## Standard Books for the Motor Boatman

No man living "knows it all"—no expert knows all that there is to be known about motor boats and the thousand and one details of motor-boat construction, care, etc.

There is always at least one man who can tell you something you don't already know, and the easiest way to get hold of that information is through books.

### Books for the Motor Boatman

"FROM NOVICE TO PILOT." (Paper covers, 30 cents; cloth covers, \$1.00;) by Geo. S. Goldie. Published by MoToR Boating.

An invaluable book for the motor boat owner, covering the choice of a boat, the necessary equipment, the installation of motor, batteries and wiring, the operation of the motor, navigation rules and requirements, how to navigate, problems in navigation, examination for license, hints and helps, etc. It is carefully and extensively indexed to make it of value as a work of reference.

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A pocket size volume of 288 pages, fully illustrated, for motor boat and yacht owners and all users of marine gasoline engines. It is devoted to the two and four-cylinder engine, battery and magneto ignition, high and low tension current, storage battery, dynamo and dry cells, cooling systems, carburetion, gasoline feeding, valves and connections, motor troubles, reverse gears, reversible propellers, starting device, submerged exhausts and mufflers, propellers, hull construction, etc.

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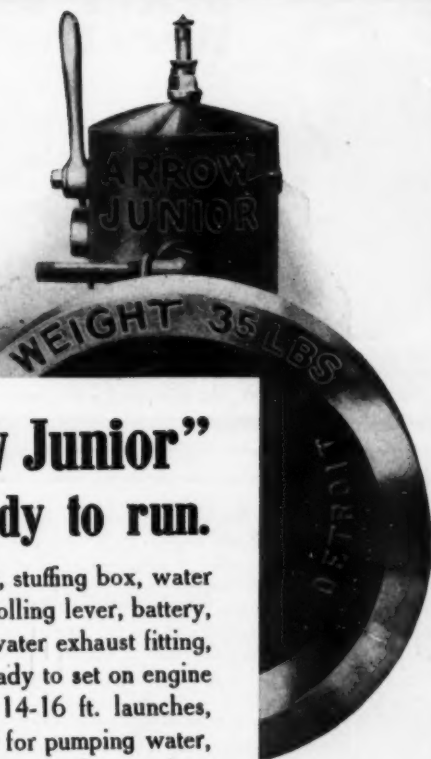
What book about motor boats or automobiles do you want? If it is not in the above

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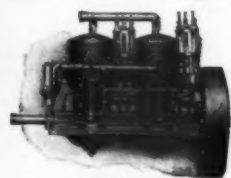
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**C**OMPLETE EQUIPMENT consists of propeller wheel, 5-ft. shaft, stuffing box, water circulating system, complete ignition system with commutator, controlling lever, battery, spark coil, spark plug, wire, etc., carburetor with float feed, under-water exhaust fitting, ball thrust bearing, handle starter, complete instructions. All complete ready to set on engine bed of boat. Suitable for small craft of all kinds, canoes, row boats, 14-16 ft. launches, tenders, dingheys, small auxiliary power for sail boats, or can be used for pumping water, running small lighting dynamo, etc. Height 10 inches, weight 35-40 pounds complete, power up to full 1½ horse power, speed up to 1500 r.p.m. Bronze bearings, steel I-beam connecting rod, steel crankshaft, guaranteed for 5 years by the Engine Works. Not a toy but a REAL MAN'S engine.

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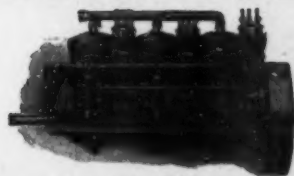
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3 CYLINDER

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There are no extras; every engine shipped ready-to-run; 5 to 75 horse power, 250-850 revolutions per minute.

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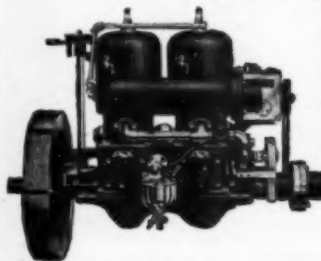
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NOT light enough to be freakish. Not heavy enough for ballast, but both light and heavy enough for good hard work in either a racing, pleasure or working boat. A common sense engine with material, workmanship and price to match. Simple and reliable. It is not necessary to be an engineer or mechanic to operate a L-A motor, for we



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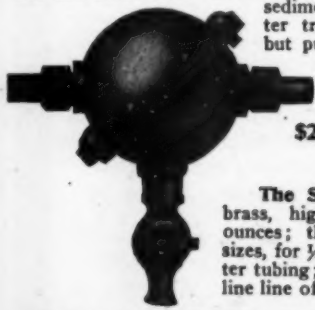


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as here shown, prevents everything but the gas-making fluid getting into the carburetor. Even the highest grade gasoline will contain sediment and water that make carburetor troubles unless removed. Nothing but pure filtered gasoline comes out of our separator, all foreign matter stops at the diaphragm and is drained through petcock.



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The SEPARATOR is made from sheet brass, highly polished; weighs but seven ounces; the connections are made in two sizes, for 1/4 inch and 5-16 inch outside diameter tubing; and is ready to place in the gasoline line of any car or motor boat.

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Our bronze chains have solid cast links—not welded—and are the strongest chains made for

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Especially adapted for rudder chains, etc. These chains, being bronze, cannot rust, nor will they corrode. No staining of woodwork possible.

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Prices on application to

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The Hyde System of Boat Building makes a perfect hull by a new process. If you are looking for beauty, speed and durability in your boat, investigate. Every Hyde owner is a satisfied owner.

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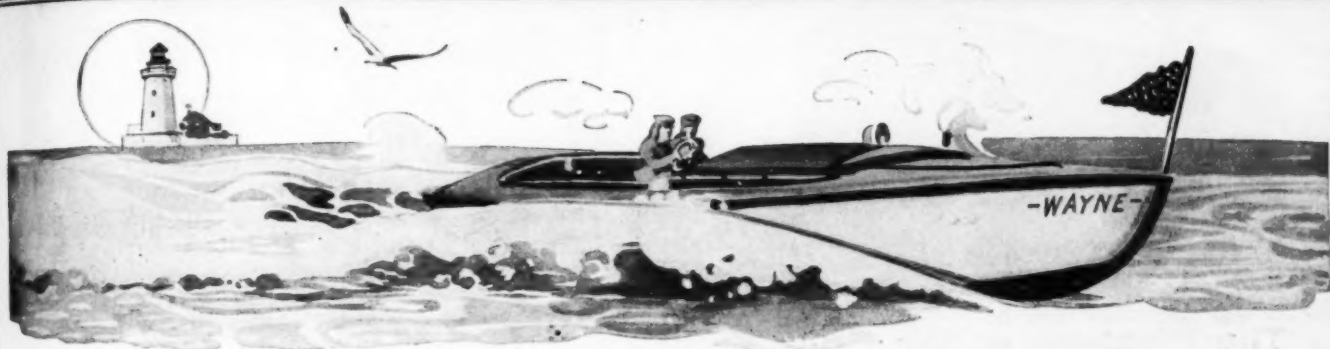
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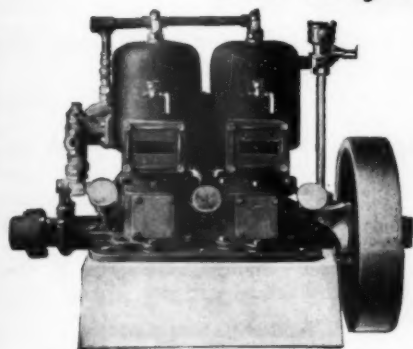
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### The Wayne Motor for Pleasure and Business



2 CYL. MOTOR  
4 inch bore, 4 inch stroke, develops 8 H. P., drives  
18 to 20 ft. boat at speed of 14 to 18 miles per hour.

**T**HE engine you install in your motor boat should have the four water craft essentials—Reliability, Power, Simplicity and Economy. If you own a boat, whether equipped with an engine or not, you, Mr. Reader, are vitally interested in motor boat engines.

You do not care how we build these engines, as long as they are correct; or what we claim for them;—"It's what will our motor do for YOU" that interests you. If you are a lover of the water and motor boating, send at once for our beautifully illustrated 1911 Marine Catalogue of

# Wayne Motors

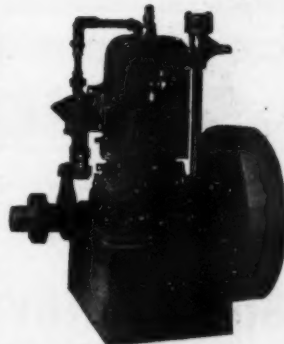
Reliability? We can tell you of Wayne Motors that have been in constant use for years, can tell you of motors that have been run for eighty hours without stopping; in fact every motor that leaves our factory is run twenty-four hours before we ship it. So much for Reliability; how about the power?

The leading engineers of the University of Michigan have tested and used in actual service the Wayne Motor. They have the highest regard for the Wayne and have found that the power is far greater than our horsepower rating.

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The Wayne is a two-cycle-three-port motor, made in two types, the one- and the two-cylinder. All parts are of standard design and interchangeable. The bearings are exceptionally large, die-cast babbitt and accurately bored. For \$220. The Wayne Motor is fully equipped, ready for installation in any boat.



1 CYL. MOTOR  
4 inch bore, 4 inch stroke, develops 4 H. P., drives 18 to 20 ft. boat at speed of 6 to 10 miles per hour.

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**W**E HAVE created an Advisory Engineering Department for the benefit of persons interested in motor boating. This Department is maintained as a bureau of information directed by motor craft experts, who make it their business to scientifically and practically answer all questions regarding your boat, either concerning the engine or the hull. Feel at liberty to ask this Department for any information you desire without the slightest obligation.

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Detroit, Mich.

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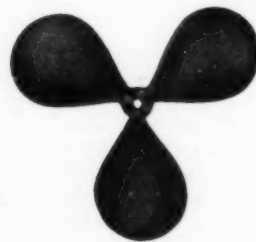
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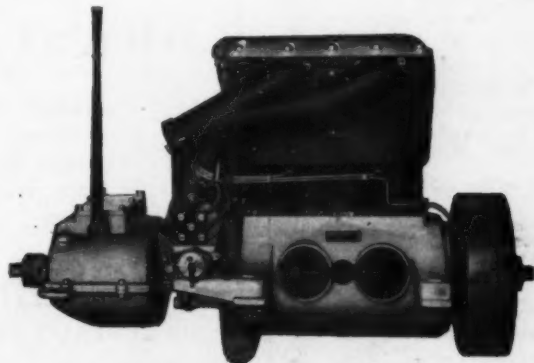
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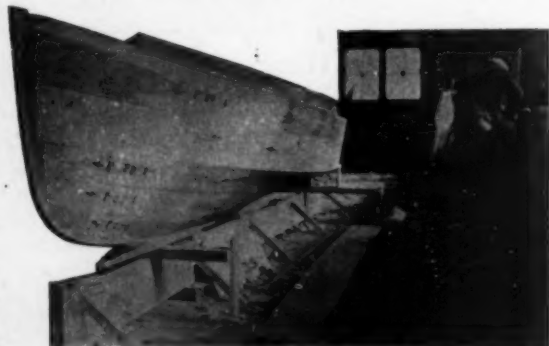
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*We design and make Hydroplanes in all sizes. Write or telephone for particulars, Gramercy 2452.*

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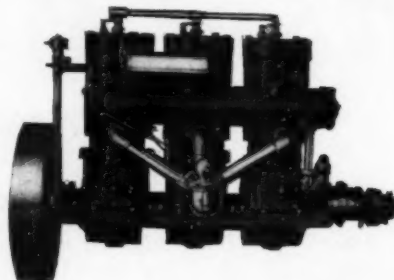
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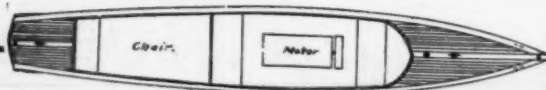
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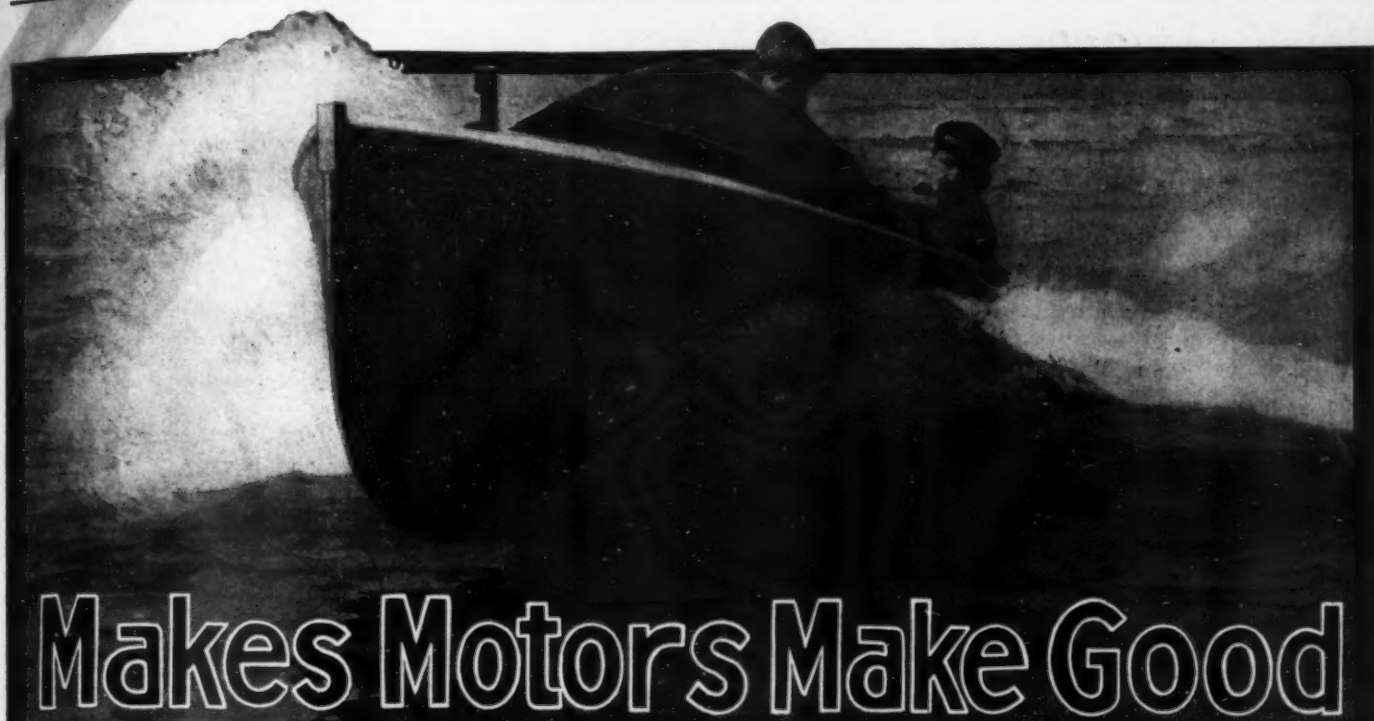
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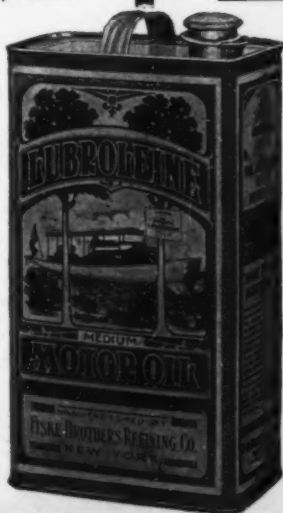
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# Prize Awards in the "Figure Eight" Racing Puzzle

The prize winners in the "figure eight" puzzle contest, which was announced in the March issue of MoToR Boating, are given below.

The solution of this puzzle rested largely upon two points:

First, from a purely theoretical point of view, the contestants must have found three points at which the boats could pass for the third time, after having followed the conditions of the puzzle.

Second, one of these three solutions must have been discarded, because it was physically impossible for two boats to meet at the same point on intersecting courses—and pass. Such a meeting would have been a collision, not a passing.

In selecting the winning solutions from those which fulfilled these conditions, the awards have been made on the basis of the mathematical accuracy of the solution, and the conciseness with which it was explained.

Incidentally one other feature in connection with these awards is interesting, the widespread interest of the puzzle itself. Approximately 3,000 solutions were received, coming from all parts of the United States and Canada, two even from France.

In conclusion, the editors of MoToR Boating wish to thank all the contestants for their interest in our competition. It has taken many hours of hard work to make the awards. Many of the answers were so nearly equal in merit that only the choice of a phrase, or even a word, made any selection possible. We feel, however, that all will join us in agreeing that, entirely aside from the prizes, the puzzle was well worth while, as a novel and interesting test of skill.

The winning solutions are as follows:

## First Prize

I. N. Tailor

Richmond Hill, L. I.

Since the 12 mile point is 12 miles from the starting line for A and 4 miles from the starting line for B, therefore in passing point 12 in successive rounds, A will have traveled the following total distances respectively: 12, 28, 44, etc., miles. Likewise B will have traveled: 4, 20, 36, etc., miles.

Designate the first series as "Series A" and the second series as "Series B." Again, each time the boats pass each other they have together gone around the course, or 16 miles. Hence the second time they pass each other, they have together gone a total distance of 32 miles. Therefore any combination of two numbers, one from "Series A" and the other from "Series B," whose sum is 32, will be a solution. Such combinations are 12 and 20, 28 and 4, either of which gives a solution. And since no other possible combination gives a sum of 32, no other solution is possible. Hence there are two and only two solutions.

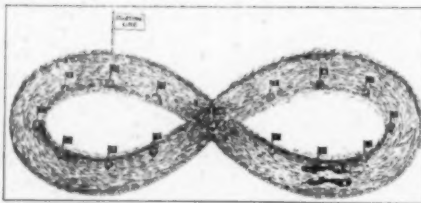
**First Solution—When B goes faster than A.** Combination 12 and 20. That is, A travels 12 miles and B travels 20 miles in passing point 12 for the second time.

1st. passing A travels 6 miles and B 10 miles, pass at point 6-14.  
2d. passing A travels 12 miles and B 20 miles, pass at point 12.  
3d. passing A travels 18 miles and B 30 miles, pass at point 2.

**Second Solution—When A travels faster than B.** Combination 28 and 4. That is, A travels 28 miles and B travels 4 miles in passing the point 12 for the second time.

1st. passing A travels 14 miles and B 2 miles, pass at point 6-14.  
2d. passing A travels 28 miles and B 4 miles, pass at point 12.  
3d. passing A travels 42 miles and B 6 miles, pass at point 10.

Hence the boats pass for the third time at the point 2 or the point 10.



The numbers 12 and 4 from "Series A" and "Series B," respectively, are significant, for they suggest an apparent solution, Combination 12 and 4.

1st. passing (?) A travels 6 miles and B 2 miles, pass (?) at point 6-14.  
2d. passing (?) A travels 12 miles and B 4 miles, pass (?) at point 12.  
3d. passing (?) A travels 24 miles and B 8 miles, pass (?) at point 8.

This is not a solution, for the boats do not "pass" at point 6-14, but cross. Hence there could be no passing but a collision instead, which would end the race then and there.

## Second Prize

Edwin S. Hall

New Haven, Conn.

Theoretically, but not practically, A could pass B for the third time at Flag 8.

Practically, A could pass B for the third time either at Flag No. 2 or Flag No. 10.

Explanation:

For convenience,

Let X = number of miles A went before passing B for the 1st. time.

And Y = number of miles B went before passing A for the 1st. time.

Then X = number of miles A went before passing B for the 2nd. time.

And Y = number of miles B went before passing A for the 2nd. time.

But X plus Y cannot be greater than 16 miles. Therefore 2X plus 2Y cannot be greater than 32 miles (multiplying by 2).

Therefore neither 2X nor 2Y can be greater than 32 miles.

From the diagram it is evident that, 2X = 12 miles, 28 miles, 44 miles, etc. (according to the number of times A passed Flag No. 12 before passing B there).

In like manner, 2Y = 4 miles, 20 miles, 36 miles, etc. But neither 2X nor 2Y can exceed 32 miles. Therefore 2X = 12 miles or 28 miles and 2Y = 4 miles or 20 miles.

From these statements there are four cases to consider.

Case 1—If A went 12 miles and B 4 before passing for the second time, they would collide, before reaching Flag 12, at Flag No. 6-14. A coming from the direction of Flag No. 5, and B from No. 15. If they could pass through each other, Flag No. 6-14 would be the point where they passed the first time, Flag No. 12 (as shown) the point where they passed the second time and Flag No. 8, the point where they passed the third time.

Case 2—If A went 12 miles and B 20, before passing for the second time, they would pass for the third time at Flag 2.

Case 3—If A went 28 miles and B 4, before passing for the second time, they would pass for the third time at Flag 10.

Case 4—If A went 28 miles and B 20, before passing for the second time, they would not pass for the second time at Flag No. 12, for 28 plus 20 = 32.

From these statements the answers given above are derived.

## Third Prize

R. F. Diemel

Brooklyn, N. Y.

The first consideration in solving a puzzle is to find, if possible, that feature which distinguishes it from an ordinary problem.

In the Boat Race puzzle the "piece-de-resistance" lies in the crossing of the course. It might appear as if the first meeting took place half way back, but if the boats cross at the six-mile post they will obviously collide and not meet again. Accordingly, we must introduce into our solution that condition which will preclude collision, namely, (i) at the 1st, 2nd, etc., meetings both boats together shall have covered 1, 2, etc., whole laps.

This is easy to see in the case of the first meeting. In the case of any other meeting, regard that meeting as the first after the immediately preceding one.

It follows as a corollary that,

(ii) successive meetings occur at equal intervals of time. The final notch in the key to our secret chamber is:

(iii) either boat may be the slower; for if the speeds were equal, A and B would meet at the 8-mile post and the start alternately.

Case I: B slower than A.

By (i) B and A together have gone 32 miles at the second meeting. Therefore from (iii), B has not yet gone a whole lap. Now, by (ii), B traveled  $\frac{1}{2} \times 4 = 2$  miles at the first meeting. Hence at the third passing B is  $3 \times 2 = 6$  miles from the start, or at the 10-mile post.

Check. At the second meeting A has gone  $(32 - 4)$  miles, and consequently at the third,  $3 \times \frac{1}{2} (32 - 4) = 42$  miles, or to the 10-mile post.

Case II: A slower than B.

As in Case I, A has covered  $1/12 \times 12 = 6$  miles by the first meeting, and, therefore,  $3 \times 6 = 18$  by the third; i. e., the boats meet again at the 2-mile post.

Check. B goes  $3 \times \frac{1}{2} (32 - 12) = 30$  miles, i. e., 14 from the start and reaches the 2-mile post.

In short, if B is slower than A, the third meeting takes place at the 10-mile post, otherwise at the 2-mile post.

## Fourth Prize

Gilbert C. Dohm

Brooklyn, N. Y.

Since A and B meet for the second time at the 12-mile post, it is evident that the speed of both boats are not equal. It is also evident that they cannot pass more than once in completing the course. Therefore, to be passing the second time, one or the other must have completed the course one. This one may be either A or B. For convenience let us consider A to make X miles, while B makes Y miles.

Then the ratios of their speeds are:

$$\frac{X}{Y} = \frac{n+12}{4}$$

Substituting:  $\frac{X}{Y} = \frac{16+12}{4} = \frac{14}{2}$

*(n being the number of miles in the course, 12 being the number of miles covered by A after completing the course once, up to the time of the second meeting with B; 4 being number of miles B has traveled.)*

The ratio of their speeds may also be

$$\frac{X}{Y} = \frac{12}{u+4}$$

Substituting:  $\frac{X}{Y} = \frac{12}{16+4} = \frac{6}{10}$

*(n being the number of miles in the course; 4 being the number of miles covered by B after completing the course once, up to the time of second meeting with A; 12 being number of miles A has traveled.)*

Therefore, in the first case, the ratio of their speeds is 14:2, or while A makes 14 miles, B makes 2 miles.

In the second case, the ratio of their speeds is 6:10, or while A makes 6 miles, B makes 10 miles.

We now have two solutions which seem to hold true:

Start A at the starting point in the direction of his arrow, and let him complete 14 miles. Also let B start at the same time from the starting point in direction of his arrow, and complete 2 miles. The first meeting will take place at the junction of the figure 8 or at the (6-14) mile post. Now allow A to complete 14 miles more in his course, and he will be at the 12-mile post. Allow B to complete 2 miles more in his course and he will also be at the 12-mile post, passing A for the second time. Now if A travels over his course for 14 more miles he will be at the 10-mile post, passing B, who has completed 2 more miles of his course. This will be the third meeting place.

Second Case—Start B in direction of his arrow and allow him to complete 10 miles. Start also A at the same time and allow him to complete 6 miles of his course in direction of his arrow. Then B at the end of his first 10 miles will be passing A at the (6-14) post at the end of his first 6 miles. This is the first meeting point. Let B travel 10 more miles on his course and A 6 more miles on his course, and they will pass each other for the second time at the 12-mile post. Then let B travel 10 more miles on his course and A travel 6 more miles on his course, and they will pass each other at the 2-mile post for the third time.

These are the only two solutions which seem to hold perfectly true. We may by solving get a ratio, 6:10; A completing 6 miles while B completes 2, and applying this ratio we find we can get them to pass for the second time at the 12-mile post. But in passing each other for the first time at the (6-14) mile post they approach one another perpendicularly, and since the speed is always maximum and they start at exactly the same instant, they would collide upon reaching this point. Therefore, a ratio of this sort would not hold true.

We have therefore the meeting place in the first case to be the 10-mile post, while in the second case it is the 2-mile post.





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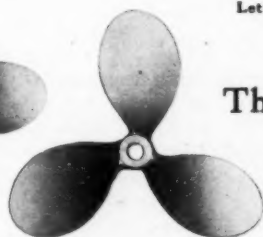
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**The Bayonne Casting Co.**

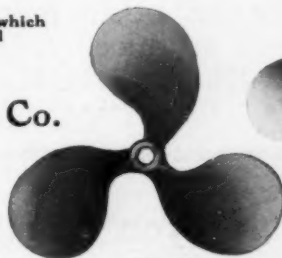
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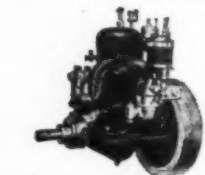
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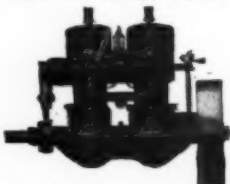
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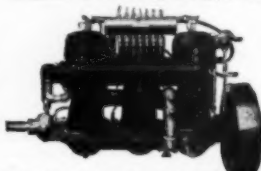
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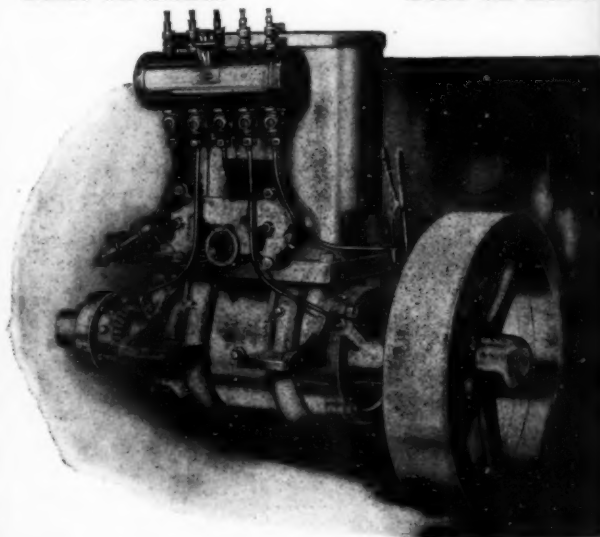
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Has been on the market for 10 years and is No Experiment. Built in 1, 2½, 3½, 4½ h.p. (single cylinders) and 5, 8 and 10 h.p. (double-cylinders).

High Speed, Light Weight—an All-Round Dependable motor—the most powerful motor on the American market—bore and stroke considered. Our catalogue will tell you all about them.

**THE ECLIPSE MOTOR CO.**  
Station A Traverse City, Mich.



# TO THE MOTORING PUBLIC

We are using this page to announce to the motor-boating and automobiling public the success of our latest motor lubricants under the name of

## Polarine

Under the Brand POLARINE, Oil, Transmission Lubricants and Greases are supplied. Each product is specially manufactured for the lubrication of the particular parts for which it is recommended.

Our own experts have prepared these lubricants and have tested them thoroughly, not only in the laboratory but also under all actual working conditions. They have used these lubricants successfully on various makes of motor boats and automobiles—alike under favorable and unfavorable temperature and mechanical conditions.

As you may have learned by personal experience, most motors are worn out long before their time on account of improper lubrication. Hundreds of breakdowns can be traced directly to the use of unsuitable lubricants. There is as much difference in lubricants as there is in motors or the weather.

Our experts, who stand at the head of their trade, have produced, in

POLARINE, lubricants that will lengthen the life of all types of motors, whether American or foreign make.

By the use of the POLARINE brand of lubricants you will

**Increase Your Power,  
Reduce Your Repair Bills,  
Prevent Many Breakdowns,  
Make Your Motor Run  
Smoothly,  
and Greatly Lengthen Its Life.**

Already thousands of owners of power boats have discovered the value of POLARINE Lubricants and are recommending them to their friends.

All dealers sell POLARINE Lubricants or can get them for you.

POLARINE Oil affords perfect lubrication in tropical or zero weather. It is delivered in sealed cans—1 gallon and 5 gallon sizes—or in barrels and half barrels. Other POLARINE lubricants in cans of convenient size.

During their long experience in making motor lubricants, our experts discovered so many useful facts about the care of gas engines, that they have prepared a booklet entitled "POLARINE POINTERS." This booklet not only gives valuable hints on the lubrication of power boats and automobiles, but it also tells the causes of all kinds of engine troubles.

You may have this booklet free if you are the owner of either a power boat or an automobile.

Send to our nearest agency.

## Standard Oil Company

(Incorporated)

### IN THICK WEATHER

In thick weather, the man with a Roper equipped boat has a great advantage. He can go out in a fog and run slow without any danger of stalling his engine by unskillful or careless use of the throttle. He can run fast, if necessary, with small chances of collision, because he can reverse and stop in a boat's length and be out of harm's way in a twinkling.

This means a lot to the fisherman, to the pleasure party caught "outside,"—in fact, to all motor boat owners and operators everywhere. It means greater confidence, greater safety, practically full speed, even in a crowded harbor.

## THE ROPER SAFETY PROPELLER

has more exclusive features than any other propelling device on the market. There's nothing else like it anywhere, at any price, and this is why:

*The Roper Safety Propeller gives you any speed, from absolute rest to full speed in either direction, on the instant, by the operation of one controlling lever, without affecting in any way the action or requiring any adjustment of the engine.*

Isn't the Roper worth looking into? See our statement on page 96.

Our Motor Boat Speedometer is a winner, too. Price \$10. Send today for our new illustrated booklet. **Agents in the following and other leading cities:**

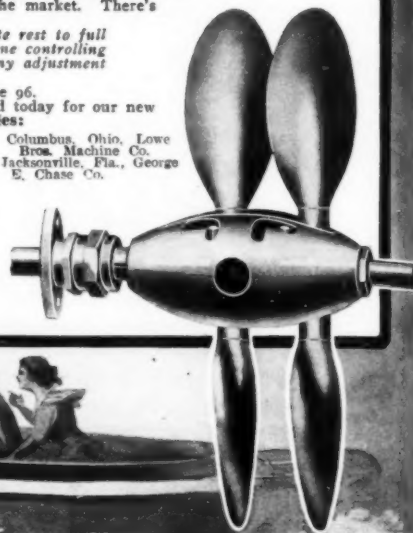
Boston, Mass., Kershaw-Williams Co.  
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**C. F. ROPER & CO.,**

**5 NOTHROP STREET,  
HOPDEALE, MASS.**



↑  
**THIS BOAT  
BOTTOM**  
↓

has been painted with Bridgeport Standard (Mitchell's) Non-Fouling Enamel paint. You will note that there are no barnacles or seaweed on it; that it goes through the water smoothly, with nothing to retard its progress.

## Which boat will go the faster?

### BRIDGEPORT STANDARD (MITCHELL'S) Non-Fouling Enamel Paint

has been put on the bottom of the speediest boats in American and European waters.

The bottoms of three American boats, Harpoon, Beaver, and Cima, winners of the Spanish-American Sonder Class races, were painted with it.

The Interstate race of the "P" class boats between Massachusetts and New York, was won by Massachusetts boats, Amoret, Mavourneen and Timandra, all users of the Bridgeport Standard (Mitchell's) Non-Fouling Enamel Paint.

The winner of the Manhasset Cup for "P" Class, Cara Mia, had its bottom painted with this paint. Grayjacket, the fastest of the Q Class, also winner of the Championship of Gravesend Bay, was painted with Bridgeport Standard (Mitchell's) Non-Fouling Enamel Paint.

Rowdy, of the New York Yacht Club 30-foot Class, made the fastest time over the Block Island Course, greatly assisted in doing the trick by being painted with Bridgeport Standard (Mitchell's) Non-Fouling Enamel Paint.

Many testimonials are at your command from yachtsmen the world over—men with international reputations all of whom are ready to vouch for the superiority of Bridgeport Standard (Mitchell's) Non-Fouling Enamel Paint.

By giving some thought now to the painting of your boat, when Spring comes you can have the work done without delay, and be sure of a surface on the bottom of the boat that will produce results. We can help to increase the speed of your boat very materially at a very small cost to you. We will be pleased to give you further facts if you will write us.

↑  
**THIS BOAT  
BOTTOM**  
↓

was painted with some inferior paint, which seems to act like a magnet for all the seaweed and impurities that abound in the water. No matter how much power your boat has, with such obstructions clinging to its bottom, it can't cut through the water and make the time it should.

**THE BRIDGEPORT WOOD FINISHING COMPANY**

**NEW MILFORD, CONN.**

**NEW YORK**

**CHICAGO**

**BOSTON**



# ***What If Your Boat Burns?***

Protect yourself against damage or loss of your boat through burning, sinking, collision, running on the rocks, or many other disasters by taking out a policy that covers the usual risks of a boat owner. It costs but a few cents a day for the satisfaction of good protection.

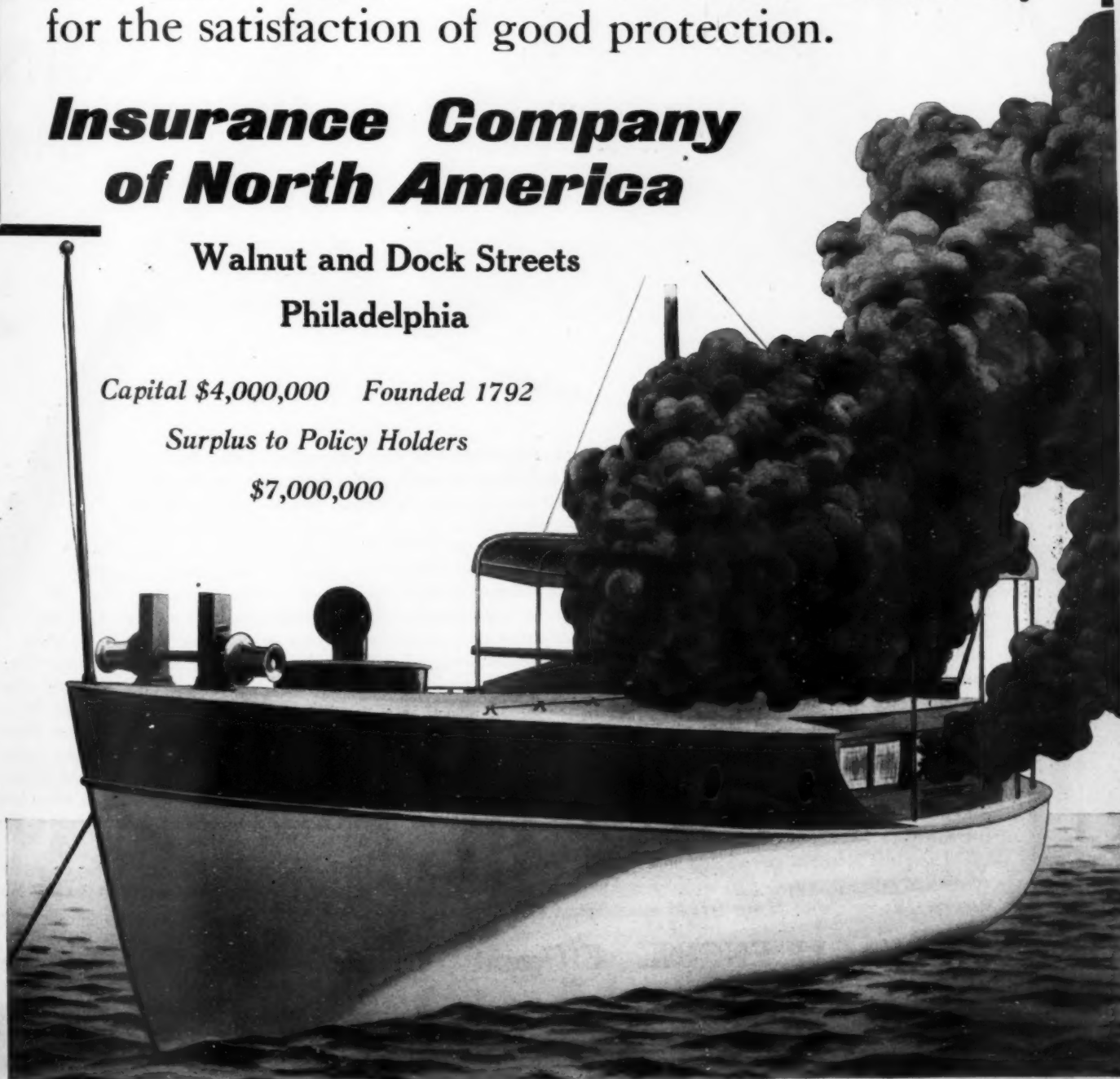
## ***Insurance Company of North America***

Walnut and Dock Streets  
Philadelphia

*Capital \$4,000,000    Founded 1792*

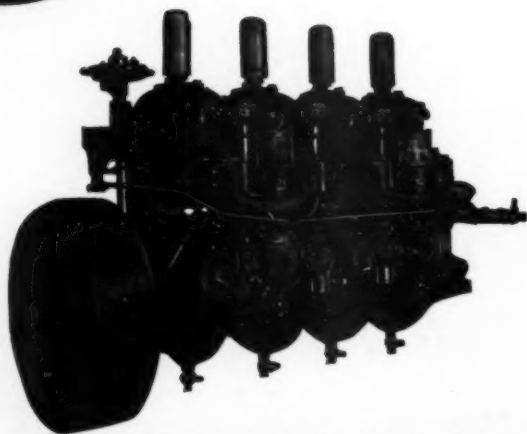
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# The Eagle



*Illustration of our Semi-Speed Models. Made in 2 Sizes and 8 Models—1, 2, 3, 4 Cylinders; 3 3/4 in. Bore, 4 Stroke and 4 1/2 in. Bore, 5 Stroke. They develop their Horse Power Ratings.*

**EAGLE**  
are  
**THE HIGHEST**  
**MARINE**  
**MADE**

**R**EGARDLESS of how technical or difficult your customer may be, irrespective of the class of people you are aiming to interest, you nor any other wide awake agent can question or ignore the individuality, superiority, clever features, forceful talking points that distinguish "Eagle Marine Engines" from all other makes.

The largest distributors of this line of manufacture have appreciated the many desirable and distinctive features of Eagle Engines. Our distributors are all extremely conservative business men; there is nothing we offer except quality and value, which in the end is volume of business with them. Certainly such an array of selling forces must appeal to you. If it is a good selling proposition for them we must assume it will be equally as appealing to you. Further, there is a pleasure in offering a line of engines to your customers to whom you are not obliged to apologize. The assurance of a satisfied customer with each sale is an invaluable asset in your business. You will notice that distributors who have taken on the Eagle line of engines never change. They continue with us from year to year; each and every one have experienced a large yearly increase in their business on Eagle Engines.

One of our distributors from a southern city who acquired the agency late in 1910 was at the New York Motor Boat & Engine Show at Madison Square Garden in February last, and remarked that he had sold *forty* Eagle Engines, and what appealed to him most was the fact that he did not have a single complaint, and the forty sales were to forty satisfied and pleased customers. Consider for a moment what an asset it means to this agent, especially so when you consider he has been obliged to introduce an entirely new line in that territory against competition that it would be difficult for us to describe.

The great secret of our success in supplying engines to the general public, and in each instance finding an enthusiastic and satisfied customer is, we believe, due to our method of testing and adjusting each engine before leaving our factory. We state without any fear of contradiction (for hundreds of our customers will verify from actual observa-

**THE EAGLE ENGINE—Efficient : Economical : Reliable**

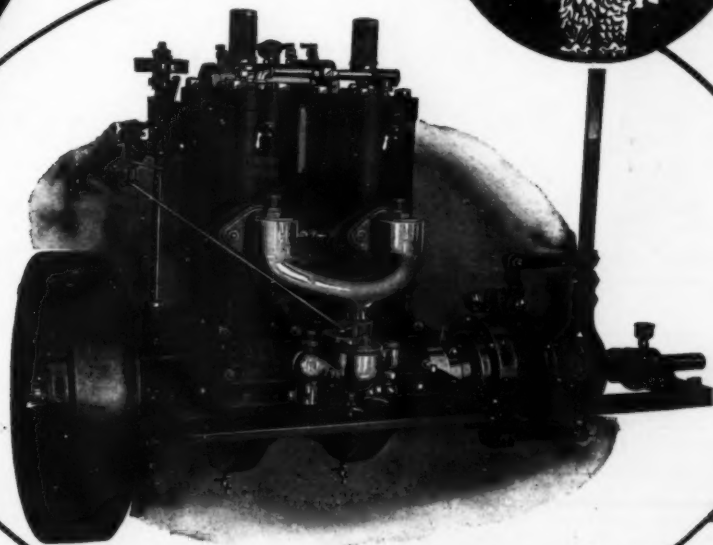


# Company

## ENGINES

TYPE OF  
MOTORS  
TODAY

for our  
logue



*A most complete nest of Heavy Duty Eagles, with a 12-year reputation for Efficiency—our catalog, which is free, tells you all about them.*

tion) that we give the most thorough test and adjustment before shipping engines of our make than any one making or supplying this line of goods.

The Eagle line of marine engines appeals to the distributor and agent largely from the standpoint of a complete line. They are supplied in eight sizes of semi-speed models from one to four cylinders in two sizes, and in six heavy duty models. An agent has in the Eagle a line of two-cycle engines so complete that each individual can have an engine that is adapted to his particular requirements.

Why not become associated with a manufacturer who has the capital and facilities necessary for meeting your demands, one that is firmly established, and has been for years, and considers the engine business a permanent business. Do not lose sight of the many changes that have taken place in this industry. There are a limited number of manufacturers who have made a success of manufacturing engines.

Eagle Engines are the last word in engine construction. They are distinguished by a rare degree of elegance. They are of such design and construction that you will not find their equal.

**THE EAGLE CO., 98 Warren Street, NEWARK, N. J.**

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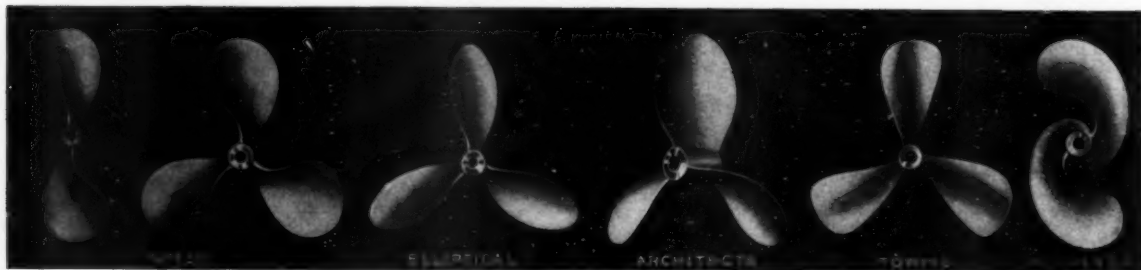
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**Simple : Silent : Durable : Dependable—THE EAGLE ENGINE**

# COLUMBIAN



**"THE WHEELS THAT WIN"**  
**WILL INCREASE YOUR SPEED**

We have the right type of Propeller for your type of Boat

WRITE FOR

**PROPELLERS IN A NUT-SHELL"**

AND OUR

**ACCESSORIES CATALOG**

DESCRIBING OUR EXCLUSIVE LINE OF

**Manganese Bronze, Struts, Rudders, Etc.**

**COLUMBIAN BRASS FOUNDRY**

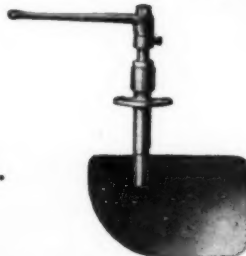
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FREEPORT, LONG ISLAND, N. Y.

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UNIVERSAL STRUT  
SELF ALIGNING



For use  
On Yachts, Steamships,  
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**The  
"CHELSEA"**

(Patent applied for)

**Automatic Striking  
SHIP'S BELL**

The basis for operating is  
the world renowned

**"CHELSEA"**

**Ship's Bell Clock**

Outfitted with the (Patent applied for)  
electric attachment



On Yachts and Steamships, the big  
bell forward is operated by the  
"Chelsea" Striking Ship's Bell Clock,  
located in the cabin or pilot-house.  
The tongue of the bell is left free,  
so it can be operated by hand in fog.

Just what Yachtsmen  
Have been waiting for

## PRICE LIST

(Not including Clock)

For bell, relay, magnet, boxes,  
switch and wiring diagram.

Sizes stated are diameters of bells

Size of Bell	Price List
5 3/4 inches . . .	<b>\$75.00</b>
6 3/4 " . . .	<b>80.00</b>
8 1/2 " . . .	<b>90.00</b>
10 1/4 " . . .	<b>100.00</b>



To these Prices add the Price List of any size and style of "CHELSEA" Ship's Bell Clock intended to be used.

To parties purchasing any one of above outfits, we will outfit any "CHELSEA" Ship's Bell Clock now in use with the (patent applied for) electric attachment, free of charge, thus avoiding necessity of buying a new clock.

Any good electrician can complete the wiring and supply the batteries.

**Chelsea Clock Co.**

16 State St.

**BOSTON, MASS., U. S. A.**

Makers of exclusively 8-Day, High Grade,  
Marine, Ship's Bell, Mantel and Auto

**CLOCKS**

ASK YOUR DEALER, NAVAL  
ARCHITECT OR ANY USER



# "SANDS" MARINE SANITARY FIXTURES

World Wide Reputation for Superior Quality and High Efficiency



PLATE S-151

The "Realy" Folding Lavatory, with tumbler rack; N. P. copper lining; N. P. Copper combined round basin and slab; N. P. copper soap and brush holders; N. P. brass pump with combination brass swing supply faucet.

Made in Two Sizes.	No. 1	No. 2
Quartered oak, polish finish.....	\$37.50	\$42.50
Mahogany, polish finish.....	\$39.00	\$44.00
Height.....	19 1/2"	22"
Width.....	15"	17"
Depth, open.....	16 1/2"	19"
Diameter of basin.....	10"	12"



PLATE S-30

The "Mohawk" Pump Water Closet, round flushing rim bowl, composition combined supply and waste pump, self closing foot valve. Oak seat and cover, heavy N. P. brass post hinges. Pump rough, with polished handle and trimmings.....\$70.00  
If mahogany seat and cover, add..... 2.00  
This is a very easy acting fixture

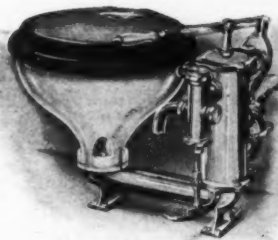


PLATE S-34

The "Knockabout" Improved Pump Water Closet, round flushing rim bowl, composition foot valve. Oak seat and cover; heavy N. P. brass post hinges. Pump rough, finished trimmings. Oak seat and cover.....\$52.50  
If mahogany seat and cover, add..... 1.50  
Weight: Net, 45 lbs.; Gross, 75 lbs.  
This fixture is a light and compact pump water closet, especially designed for small yachts and launches where both space and weight are essential details.



PLATE S-145

The "Hobron" Vitro-Adamant Glazed White All Over Folding Lavatory, N. P. brass supports and bulkhead brackets. N. P. brass combination self-closing faucet for hot and cold water. Complete.....\$45.00  
Weight:  
Net.....45 lbs.  
Gross.....75 lbs.  
Dimensions:  
Height over all.....28 1/2 ins.  
Width.....16 1/2 ins.  
Depth open.....17 ins.  
Depth closed..... 7 ins.



PLATE S-750

Double Acting Brass Auto Bilge Pump, 15 inches long under spout and fitted with 5 feet of rubber hose and coupling.

Pumps a steady stream of water without having to work hard. Can be stowed in small place under locker and is always ready for use.

No. 1. Chamber 1 1/4 in. diam	\$3.00
No. 2. Chamber 1 1/2 in. diam	4.50
No. 3. Chamber 1 3/4 in. diam	5.50
No. 4. Chamber 2 in. diam	6.00
24 in. long, with foot rest	8.00



PLATE S-126

The "Glenora" Composition Flange and Coupling for use on supply and discharge pipe of closets. Straight or bent coupling.

1/4 in.....	\$2.25
1/2 in.....	3.00
3/4 in.....	3.50
1 in.....	4.00

**NEW STYLE EXTRA HEAVY OVAL PEDESTAL, VITRO-ADAMANT BOWL. Non-Soil flushing rim. Improved wash. Improved combined supply and waste pump WITH FOUR INCH CYLINDER, EFFICIENT and EASY-ACTING**

**NEW HIGH GRADE PUMP WATER CLOSET NOW READY**  
For use above or below the water line



"FLORIDA" Plate S-2015

(Design Patented—Copyrighted)

Price, with quartered oak, cabinet finish seat and cover, pump rough with polished trimmings: **\$100.00**

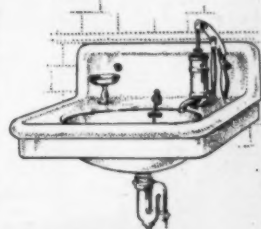


PLATE S-307B

The "Majestic" Vitro-Adamant Lavatory in one piece, N. P. double acting brass pump, N. P. brass full "g" trap, with waste pipe to deck. White enameled bulkhead brackets. Price.....\$35.00



PLATE S-100B

Round Flange Composition Monitor Air Port, with heavy brass frame and hinge to give sufficient rigidity to prevent springing and breaking the glass.

Diam of Opening	Price Plain	Diam of Opening	Price Plain
4 in.....	\$4.00	7 in.....	\$4.75
5 in.....	5.25	8 in.....	10.75
6 in.....	7.00	9 in.....	13.00

**Automatic Safety water supply foot valve. ALL WORKING METAL PARTS MADE OF OUR SPECIAL NON-CORROSIVE COMPOSITION. Closet mounted on metal base plate.**

**Workmanship "Sands Standard"**

Complete line of closets, lavatories, portlights, deck plates, basin and galley pumps described in catalog "A" sent upon request

**A. B. SANDS & SON COMPANY**

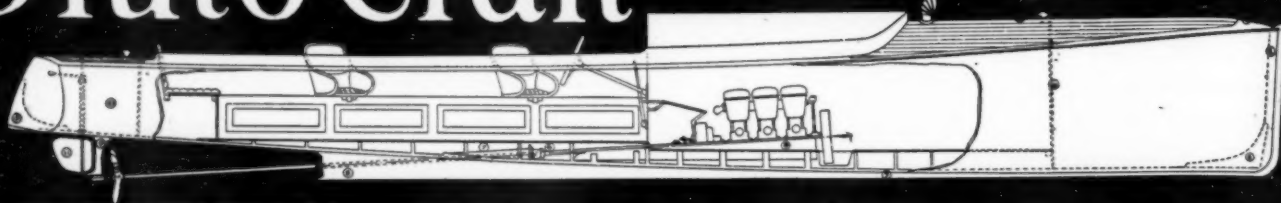
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MARINE PLUMBING SPECIALTIES

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1849—"PIONEERS FOR OVER SIXTY YEARS"—1911

# Auto Craft Gentlemen's Runabout



## A Power Boat De Luxe Price \$775 Complete

The Auto Craft Gentleman's Runabout is a semi-speed boat that has class in every line and feature from stem to stern—and shows it.

Just the boat for a busy city man's recreation, ideal for an exhilarating ride at express speed between Summer home and office—a fast dash over the water, afternoons and evenings—for entertaining parties. Makes the trip between points interesting and highly enjoyable. Controlled by one operator.

Length 25 ft., beam 4 ft. 6 in., speed 15 miles per hour, seats six in luxury, powered with 11 H. P. Ferro Motor, equipped with reverse gear, rear starting device, metal air chambers (like a life-boat), outboard gasoline drain, and every possible device for safety and comfort. Auto Craft silencer eliminates all noise. Greater speed with higher power at extra cost.

### Write for Free Folder

or send 10c. postage for our Big Boat Catalogue which describes our complete line of Auto Craft Specials, including:

24 ft. (8 H. P. Ferro and Reverse Gear).....	\$450.00
21½ ft. (4 H. P. Ferro and Reverse Gear).....	\$300.00
18 ft. (3 H. P. Ferro).....	\$200.00

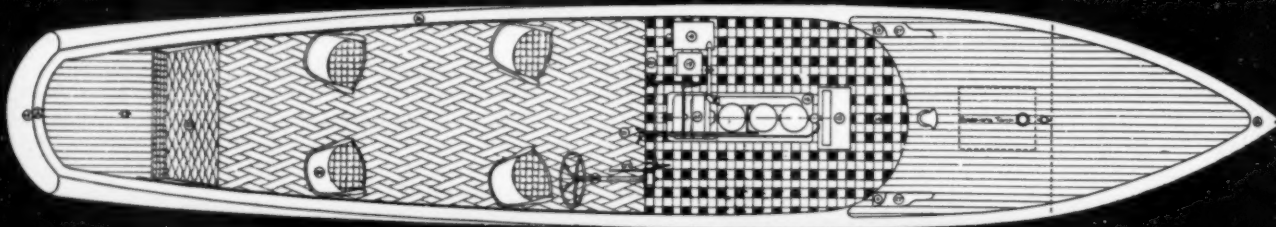
and many other high class models. Auto Craft are "Built on Honor." We guarantee Safety—Silence—Speed—Comfort—Durability and Satisfaction.

**The Cleveland Auto Boat Mfg. Co.**

Dealers in All Large Cities

1037 River Ave., N. W.

Cleveland, Ohio, U. S. A.



## Holliday Marine Motors and Reverse Gears

*Famous for Long, Steady Service*

### The Ideal Power Plant for Commercial Motor Boats

20-30 and 40 Horse Power Holliday Medium Heavy Duty—4 Cycle—Conservatively Rated—Economical Fuel Consumption—Full Rated Horse Power  
Developed at Nominal Speed

**A Few Users:** MERCHANTS LITERAGE COMPANY, GREAT LAKES DOCKS & DREDGE CO., SCULLY STEEL & IRON CO., CHICAGO POLICE DEPARTMENT, WACATANA TRANSPORTATION COMPANY

**We want agents. 1911 territory now being assigned. Write for proposition.**

**HOLLIDAY ENGINEERING CO.**

751 Bunker Street,

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Established 1891







***"Best for Motor-Maker-Man"***

¶ A Motor Boat Oil is simply required to do two things---Lubricate and burn up cleanly. All oils lubricate, but few will burn up cleanly, because they contain too much carbon.

¶ Wolf's Head Oil is the most highly filtered oil made. It is distilled from Pure Pennsylvania Crude--with high gravity and high fire test.

¶ It contains less carbon than any other oil, and possesses the same lubricating body (light, medium or heavy).

¶ It is clearest and cleanest. Its use will save time, expense and trouble.

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## "Dinner is Served"

in that snug little cabin and each article of food prepared to a nicety. There's a vast amount of satisfaction in cooking upon

## PYRO MARINE STOVES

These stoves are especially adapted for marine use. They give the maximum of heat and concentrate it in the proper spot, unaffected by the careening of the boat. They consume very little space, are light, compact, portable, odorless and smokeless.

Pyro Marine Stoves are constructed of galvanized cast iron absolutely rust proof. The burners are cast of brass and the tanks are brass, nickel plated. A guard rail is fitted to each stove to prevent the sliding of cooking utensils.

Denatured Alcohol—the fuel used in Pyro Marine Stoves, creates an immense heat at very little cost.

Get one of these splendid Stoves this season for your boat. You'll be delighted with the results. Pyros are made in one, two and three Burner sizes.

Send for our descriptive literature, including price list, today.



**THE ALCOHOL UTILITIES CO.**  
40 East 21st Street

New York

# HAVOLINE OIL

## For Marine Motors

A Marine Motor Cylinder Oil is required to perform two essentials—*lubricate and burn up cleanly*. Very few cylinder Oils will do the second—*because they contain too much carbon*.

Havoline Marine Motor Oil, by a graduated and costly process of filtration, is freed from carbon impurities to the greatest extent possible.

That's why Havoline keeps the motor clean and in perfect working order. That's why

### "It Makes a Difference"

## HAVOLINE OIL COMPANY

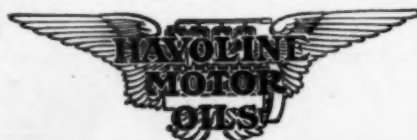
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Used and recommended by all the leading  
Marine Motor Manufacturers.



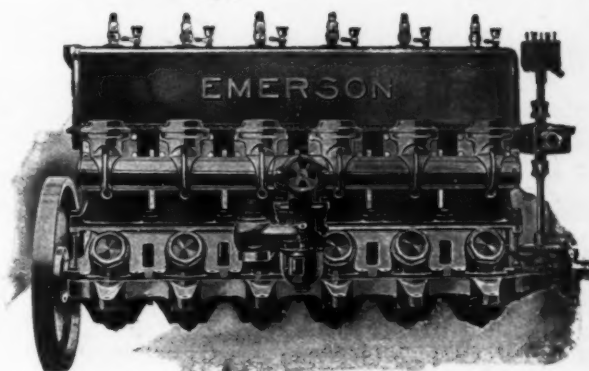
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# World's Records and Performances of the EMERSON ENGINES

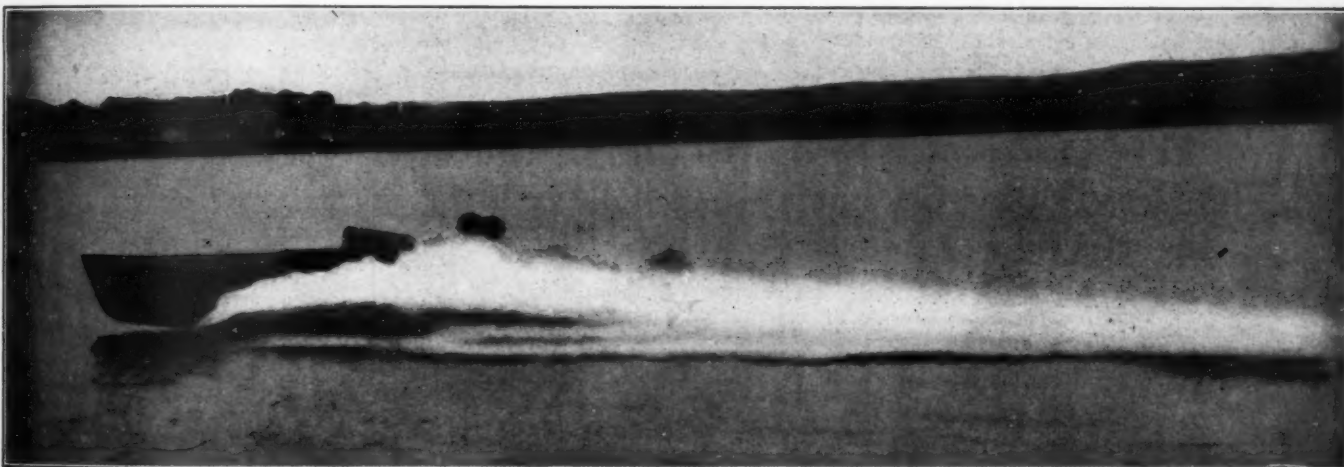
THESE engines are built by workmen most of whom were selected from the United States Gun Factory at Washington, with special machinery that insures a great accuracy; steels of exceptionally high tensile strength and toughness are employed wherever possible, even the fly-wheel centers are of high carbon saw-plate ground and oil-tempered to insure great strength and lightness. The crank-shaft has over thirty inches of bearing surface to insure against frequent adjustment. The engine is practically finished all over, the composition base is scraped all over and the copper jackets, manifolds and inspection plates highly polished, making the most attractive engine ever constructed. Our exceptional facilities enable us to give the quality and power at the right price while our design provides for eliminating the unnecessary weights of cast iron, heretofore necessary in engine construction. With this engine a light weight boat can be constructed that is seaworthy and with a surplus strength to carry the motor, at from \$200 to \$400 that will, with a certainty, far surpass in speed and comfort any boat carrying a heavy motor with a necessarily proportionately heavy boat regardless of power or cost. With our engine, the moving parts being light and strong, eliminates the disagreeable vibration produced by heavy motors. The following results show that no engine of any make has ever before been able to produce such marvelous speed and endurance as the "Emerson" and, in ten days' racing, in competition with the fastest boats in existence, has won more important races, carrying with them cash prizes and valuable trophies, than all the rest of the various makes of engines combined.



**Emerson Six Cylinder Racing Engine**

100-125 H. P.

Weight 300 pounds



## "Emerson" World's Twenty-six-foot Champion, 36.1 Miles per Hour at Washington, D. C., August 20, 1910.

- Winner 26-foot free-for-all championship Western Power Boat Association.
- Winner 32-foot free-for-all championship Western Power Boat Association.
- Winner 40-foot free-for-all championship Western Power Boat Association.
- Winner Blue Pennant given by "Motor Boat" for Western Speed Championship.
- Winner Carpenter Cup representing Speed Championship, Hudson River Yacht Racing Association.
- Winner Lukenheimer Trophy, Ohio Valley Carnival.
- Winner Corinthian Yacht Club Trophy, Speed Championship, Potomac River.
- Winner Marshall Hall Trophy for speed championship.

Holder of World's Record for 26-foot displacement boats in competition surpassing in speed the records of such well-known boats as Independence, champion of W. P. B. A., 1908; Hoosier Boy, champion W. P. B. A., 1909; Red Top II, champion of Mississippi Valley 1910; Scripps, Mascot, Comet, Disturber, M. V. II, Syracuse, Eldredge V, Gun Fire II, Elmer L., or any other boat that has ever raced on the courses of the Mississippi Valley, Western Power Boat or Hudson River Yacht Racing Associations many of which were equipped with engines of from two to six times the cylinder area of the Emerson's engine. In all of her races this boat has carried two heavy men, weighing over 185 pounds each, and her hull is substantial, strong and seaworthy, weighing over 600 pounds and is not a racing freak. The above performances have been made possible by our new four-port system, 300 pound engine, far surpassing any motor ever built for workmanship, finish, design, or power to pounds of engine weight.

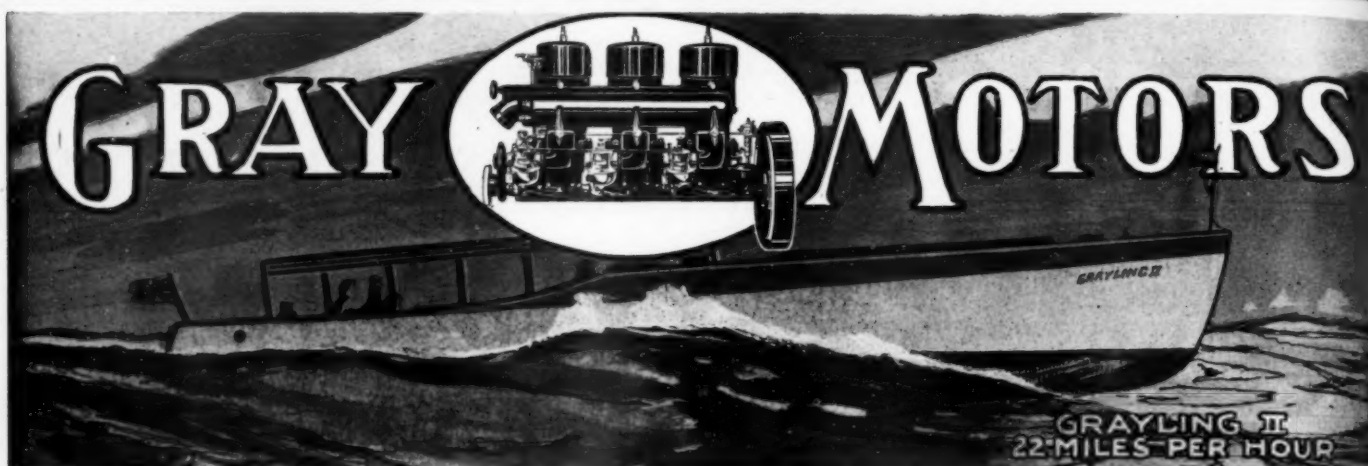
*Write for Catalog to-day*

**Manufactured by the**

**EMERSON ENGINE COMPANY (Inc.)**

**ALEXANDRIA, VA., U. S. A.**

**NEW YORK OFFICE: 1737 BROADWAY**



### Accessibility of Model "T"

It took 14 minutes for an inexperienced man to disassemble the motor as you see it — the first time — it took less time to put it together again. He said he could do it a second time in ten minutes.

Removable cylinder heads. (The most accessible engine built.)

Cylinder can be removed without interfering with the bearings, exhaust manifold, gasoline or exhaust piping.

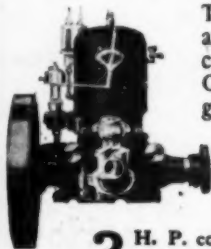
Pistons can be removed without removing the cylinder, simply taking off cylinder head and remove two large hand hole plates on the side.

YOU KNOW what accessibility means in a boat.

That's only one of the features of a Gray Model T.

1, 2 and 3 Cylinders, 7 to 36 H. P.

### The Gray Motor Co. has always believed in advertising Price in PLAIN FIGURES



This little single cylinder motor has the same workmanship, the same quality and material — the same strong guarantee as our \$528.00 motor. Just as carefully built as it is possible to build a marine engine. Our big plant with its splendid organization enables us to turn out these engines in such large quantities that we can afford to sell them at reasonable prices.

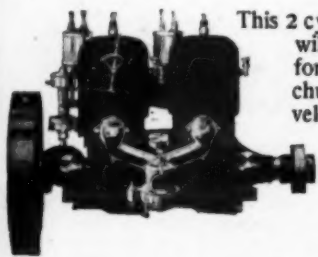
The broad experience — the splendid equipment and absolute guarantee behind the Gray Motor — insure you a satisfactory motor and real motor satisfaction.

3 H. P. complete outfit  
guaranteed to develop  
4 H. P. ....

**\$60.00**

6 H. P. complete outfit  
guaranteed to develop  
7 H. P. ....

**\$89.50**



This 2 cylinder motor is a remarkable engine on account of the power it will develop. They always develop much more than the rating calls for. It's this reserve power that wins races. In a Test by the Massachusetts Institute of Technology, one of these 12 H. P. motors developed 17½ H. P. Their smooth running qualities make them the choice of the man who wants an engine for a pleasure boat and their access power developed is their best recommendation for speed boats.

**12 H. P. complete outfit, all  
ready to install in boat... \$188.00**

### Electric Light Outfits

For Yachts and Private Houses Small Factories and Stores.

Close connected Engine and Generator mounted on single base.



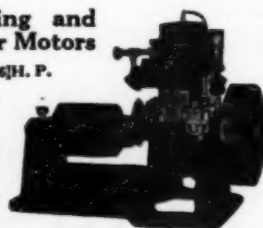
### GRAY Farm - Pumping and General Power Motors

Gasoline or Kerosene, 3 to 36 H. P.

6 H. P. Farm Engine, \$94 to \$124 complete.

3 H. P. Farm and Stationary Engine, \$65, guaranteed to develop 4 H. P.

24 H. P. Irrigation Pumping Engine, \$346—36 H. P. for \$560.



**GRAY MOTOR CO., 522 Woodward Ave., DETROIT, MICH.**

Canadian Gray Motors Ltd, 522 Walkerville, Ont.

### How to Select a Marine Motor

First write for our

### BIG MARINE CATALOG

the largest and most complete gas engine catalog ever published.

Gives details and information you should know.

Tells the truth, and a lot of it, about Gray Motors.

You will know exactly what to expect and get it if you decide on a Gray.

Will give you a lot of general motor information.

It's a real education in marine motors — their construction, use and design.

We have a system — complete — thorough. We want **you to know** all about it. We will have no apologies to offer — or secrets to hide. We show you **all**.

It will tell you where you can see the latest type of a Gray Motor in use.

But better still it will carry our urgent invitation to visit our big plant — where you can **see** the care we take in manufacturing, testing and shipping and care of our motors after they are sold.

### Our Accessory Bargains

will

### Save You Money

Write today for our Bargain Circulars and Catalog of Boat and Engine Supplies



# DOUBTER THIS TO YOU

THIS, a copy of the twelfth requisition received by us from the U. S. Navy Department for Perfex Ignition Systems purchased for installation on gas engines in U. S. Motor Boats and

## SUBMARINES

ought to convince you, if nothing else will, of the *efficiency*, the real *merit*, besides the waterproof features of the System. Mr. Cabin-Boatist, ponder over this, and you, Mr. Open-Boatist, take heed. Your *life*, forgetting convenience, is perhaps at Stake this Summer, with Box Coil Jump-Spark Ignition.

*In 1911, Commiseration will be changed to Derision, when you tell your pet 'out of commission from water' story.*

## MONEY BACK GUARANTEE

### :: :: PERFEX FEATURES :: ::

Possessed by No Other System.

#### MASTER VIBRATOR

The same spark in quantity and quality in each cylinder. Not a different spark resulting in skipping of one or more cylinders.

By removing and reversing vibrator the positive point becomes the negative and vice-versa. Removal of vibrator serves as a lock on engine.

**POLE CHANGING  
VIBRATOR**

**FITABILITY  
OF IGNITOR** The diameter is but two inches. Out of the way of pet cocks, water tubes, etc. Compare this with devices 5½ inches across.

This with Perfex Ignition gives the first and only MAGNETO WATERPROOF IGNITION SYSTEM in the world. It merits your investigation.

**PERFEX  
MAGNETO**

**Electric Goods Mfg. Co.**  
P. O. BOX "D" CANTON, MASS.

PUT WINGS ON YOUR BOAT OR CAR!

PERFEX IGNITION

PERFEX MAGNETO

E.G.M.C. DESK 6 CANTON, MASS.

WATER-PROOF! POWER-ADDING!

# BUFFALO

## MARINE ENGINES

### IT IS FACTS THAT COUNT

All the adjectives in the dictionary will not convince you when it comes to selecting your engine. What you want is **FACTS**.

You are right. There is just one engine test—the wear and tear of actual work in the boat. We know that BUFFALOS stand it because thousands of satisfied users have told us so. It is our policy to make BUFFALOS supply their own selling talk. Our best argument is “ask a **BUFFALO** owner.”

#### A RANDOM FEW OF THE 10,000 BUFFALOS IN USE

Below are the records of just a few BUFFALOS selected at random from those we have heard about. There are others just as good near your own home, and we'll be glad to tell you about them.

Owner's Name.	Address	Size.	Years Used.	Used For	Repair Cost
D. L. Davis,	Salt Lake City	7 H. P.	7	General Utility	None
J. K. Arnold,	Zanesville, O.	5 H. P.	5	Pleasure	None
T. F. Snyder,	Norfolk, Va.	7½ H. P.	5	General Utility	\$1
Capt. A. M. Calder,	Charleston, S. C.	36 H. P.	4	Towing	Small*
Buff. Dredging Co.,	Buffalo, N. Y.	10 H. P.	2	Ferry	\$25
Jas. L. Hammond,	Mattapoisett, Mass.	24 H. P.	3	Towing	\$10
Chas. L. Faulkner,	Fairbanks, Md.	18 H. P.	4	Oyster Boat	Small*
D. D. Hanover,	Alpena, Mich.	7½ H. P.	6	Pleasure	None
Harvey W. Ropp,	Philadelphia, Pa.	7 H. P.	9	Cruising	\$20
Robert J. McKay,	Pittsburg, Pa.	40 H. P.	2	Pleasure	None
S. C. McLanahan,	Seabreeze, Fla.	4 H. P.	7	Pleasure	None
W. W. Eccles,	Auburn, N. Y.	10 H. P.	3	Pleasure	None
C. H. Forry,	Hanover, O.	2 H. P.	5	Pleasure	30 cts.
W. L. Hudson,	Norfolk, Va.	7½ H. P.	3	Oyster Boat	None

\*Owner's Estimate

Twenty-three Models,  
Regular Heavy Duty and  
High Speed Types, 2 to  
225 Horsepower.

*"The Engine of Constant Service"*

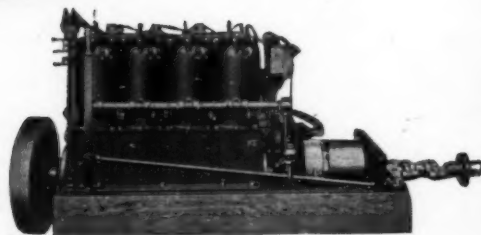
**BUFFALO GASOLINE MOTOR CO.**

1204-16 Niagara St., Buffalo, N. Y.

**"An Engine for Any  
Sort or Size of Boat from  
Canoe to Cruiser."**

Your Protection  
and Safeguard

# LAMB ENGINES



**THEY** are the beacon lights of motor boating. They represent, and are the perfect quality of marine engine construction.

They are solid, stable, built for hard usage—the kind of marine engine that the motor boatman needs, and always finds to be all that a high grade marine motor ought to be.

#### READ CAREFULLY THE LAMB ENGINE SPECIFICATIONS and then send for the Lamb Engine Catalogue.

**CYLINDERS**—Cast separately, water jackets fitted with hand holes, walls ground, medium duty and high speed. 2½ in. bore, 4 in. stroke; heavy duty, 6½ in. stroke, 7 in. stroke.

**CRANK CASE**—Large hand-hole plates, end disk removable.

**WATER CIRCULATION**—Bronze, long-stroke plunger pump. Water piping has expansion joints. Water bypassed around cylinder head joint.

**REVERSE CLUTCH**—Planetary type. Direct cone drive ahead; for reverse gears in action, gears steel on bronze pinions; enclosed in oil; same speed astern as ahead. Only two adjustments. Control led to forward end of motor.

**IGNITION**—Jump spark; Splitdorf or Bosch Magneto, when specified; controls led to forward part of motor.

**CYLINDER HEADS**—Removable; valve caps polished brass.

**CRANK-SHAFT**—One-piece open hearth steel, milled, turned and ground; fly-wheel end tapered.

**LUBRICATION**—Positive mechanical oiler, driven by ratchet from cam-shaft; oil carried to each wearing part; centrifugal oil rings used on crank shaft.

**PISTONS AND RINGS**—Trunk pattern; 3 rings on medium duty type; 5 rings heavy duty type; ground.

**INTAKE BRANCHES**—Give a direct and easy flow of gas; fitted with hand-hole plates.

**CARBURETOR**—Schebler; controls led to forward part of motor; hot-air intake.

**VALVES AND VALVE MECHANISM**—Both on one side. Thoroughly water-jacketed. Valve and stem forged from one piece. Lateral adjustment on push rod. Rod actuated by link and roller of hardened steel. Guides long and removable.

**CONNECTING RODS**—Annealed malleable iron H. cross-section. All connecting rods except on 15 H. P. are fitted with 4 bolts; each bolt fitted with 2 nuts and cotter pins.

Send for Catalogue, Address Department "M"

**Lamb Engine Company of New York**  
Eastern Distributors  
30 Church Street, New York City

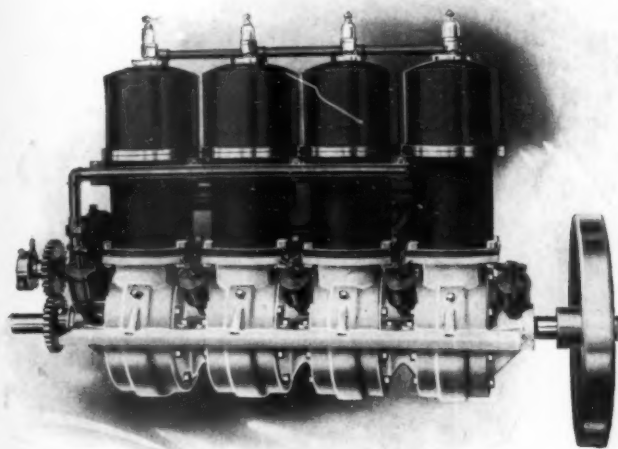
**Lamb Boat & Engine Company**  
Members N. A. E. & B. M.  
Clinton, Iowa



# THE MOST ECONOMICAL MOTOR

*is the Motor that will make your boat most efficient.*

## Elbridge Marine Engines



are made in so wide a range of types that they furnish the power *exactly* suited to any type of Hull.

They develop more power for weight and bulk than any others, therefore give more to carrying the boat and its load and less to useless weight in the power plant.

Extreme simplicity of construction, the best of materials and careful attention to little details in manufacture combine to make them efficient, economical, flexible and durable.

Our 1911 catalog shows the most important types. Send for it before you equip your boat.—It's FREE.

ELBRIDGE ENGINE CO., 20 Culver Road, Rochester, N. Y.

## MARINE MOTOR THRUST BALL BEARINGS

By our method of manufacture we enable you to make a big cut in your cost.

They will do the same work, under like conditions, as those you now use.



Made in sizes up to 2½ inch shaft.

Specials in quantities.

Send us your sizes and ask for Booklet O.

PRESSED STEEL MFG. CO. 504 Land Title Building  
PHILADELPHIA, PA. :: U. S. A.

European Agents: Smith Brothers, Aylestone Park, Leicester, Eng.

# STERLING



## A New Long Distance Speed Endurance Record

TANDS equipped with a 100 H. P. Sterling  
119.18 Miles. Average Speed 28.11 M. P. H.

## A New Speed Record

On the Palm Beach Course

ACE II equipped with a 100 H. P. Sterling  
32.11 Miles Per Hour

## Long Distance Speed Endurance Race

1909 Won by COURIER 100 H. P. Sterling  
1910 Won by DEWEY 65 H. P. Sterling

WHY HESITATE IN THE SELECTION OF AN ENGINE?

Engines 8 to 240 H. P. 2 to 8 Cylinders, for Speed, Runabouts, Cruisers or Work Boats

**Sterling Engine Company, 1256 Niagara Street Buffalo, N. Y.**

## A ROYAL FLUSH

ENDURANCE is the TEST that TELLS  
"STERLINGS" stand first in the proof

## 5 STERLING WINNERS

1st in 11 Racing Events at  
Palm Beach, Florida

March, 14, 15, 16, 17, 1911

22 Entries—13 Events

ACE II, Winner Speed Record Trial	March 14
TANDS, Winner Speed Record Florida Built Boats	March 14
TANDS, Winner Class C	March 15
TANDS, Winner Class BC	March 15
TANDS, Winner Class E	March 16
TANDS, Winner Speed Endurance Contest	March 17
DEWEY, Winner Class DE	March 16
DEWEY, Winner Class DE, Special Race	March 16
RUTH K, Winner all Boats, A. P. B. A. Handicap	March 14
RUTH K, Winner Class A, Special Race	March 16
SUELO, Winner Class B, Boats under 32 ft.	March 15



